arrangement primer 1:5'-GATGAGTTCGTGTCCGTACAACTGG-3' (array number No. 1st), respectively.
And 20microM solution 5muL of the primers 1 and 2 which show primer 2:5'-GGTTATCGAAATCAGCCACAGCGCC-3' (array number No. 2nd) is made to flow.
A disk also includes the three reagent reservoirs D, E, and F in a figure, Respectively, the TaqDNA polymerase of every dNTP; of distilled water 54muL, solution 10muL of the 100mM tris HCl (pH 8.3), 500mM KCl, 15mM MgCl2, 0.1% gelatin, and 1.25microM and 1microL is included by the concentration of five unit [/micro] L.
A disk includes reaction-chamber G produced in order to promote mixing of these reagents using a FUREKISHURA loop rate wave ingredient (as being indicated by U.S. Pat. No. 5,006,749). And cooling and the heating method through the Peltier ingredient are contained in arrangement of a reaction chamber. It is arranged at a device and deals in these ingredients so that the reaction chamber may be specifically provided with heating and cooling indispensable to a disk. The ** disk which contains G from the reaction component A of a multiplex lot is provided.
Amplification is started by introducing sample DNA and a primer into the port A, B, and C of each set. When all the samples and a primer are introduced into a port, a disk rotates at speed of 1-30,000 rpm which shows the effect of making reaction-chamber G mixing a reagent. The valve which controls the reservoir D, E, and F is opened wide simultaneously, and the contents of these reservoirs are sent to reaction-chamber G. A primer and a reagent are increased by activation of a FUREKISHURA loop rate wave ingredient, mixing the sample DNAs. DNA amplification happens by a reaction chamber using the following heat SAITARU programs. A reaction mixture is heated for 3 minutes at 95 ** at first. it -- henceforth -- amplification cycles -- a stage -- one -- 95 -- ** -- one -- a minute -- between -- incubating --; -- a stage -- two -- 37 -- ** -- one -- a minute -- between -- cooling --; -- and -- a stage -- three -- 72 -- ** -- three -- a minute -- between -- heating -- a stage -- containing . 20 totals repeat these amplification cycles, and a reaction is completed by incubating for 5 minutes at 72 **.
By rotating a disk at speed of 1-30,000 rpm, and opening the valve of reaction-chamber G which results in the capillary-electrophoresis unit H, As a result, an amplification DNA fragment is analyzed by moving to the capillary-electrophoresis unit H to which the reaction mixture of the quantity in an electrophoresis unit is moved. Especially 10microL is determined by the quantity of a reaction mixture, and the combination of the speed which the length and the disk of the time when a valve is wide opened by reaction-chamber G rotate. Capillary electrophoresis is completed as indicated in the Example 11 below, and fractionation of the DNA kind detected using the means of optical or others is carried out as indicated by Example 2 in the top. This method provides the amplification and the analysis apparatus which are used beneficially and which were uniformed, in order to perform PCR and other amplification

reactions in a sample under the conditions of the restricted sample.
Example 5DNA restrictions, digestion, analysis restriction enzyme digestion, and analysis of a restriction fragment are conducted using a disk and a device as mentioned above by Example 1. A double-stranded-DNA fragment is digested by restriction and a nucleotide, and capillary electrophoresis analyzes substantially. Reagent mixing, DNA digestion, and restriction fragment analysis are conducted on a disk. The schematic diagram of the structure of the disk is shown in drawing 22.
A disk contains reaction-chamber E; and the capillary-electrophoresis unit F which are arranged in order to mix a reagent as above-mentioned in the reagent reservoirs B and C of A; 3 sample inflow ports, and D; example 5. A reagent reservoir to the reservoir B The restriction enzyme of the concentration of 20 unit [/micro] L, For example, HindIII 1-2microL; the distilled water of 30microL is contained at the reservoir C in solution 4muL; of the 100mM tris- HCl (pH 7.9), 100mM MgCl2, and 10mM dithiothreitol, and the reservoir D. The disk provided with E from the reaction component A of a multiplex lot is also provided.
Restriction enzyme digestion of DNA is started by installing solution (generally 10mM tris- HCl, 1mM EDTA (pH 8)) 4-5microL containing 4microg bacteriophage lambda DNA in sample inflow port A. A DNA sample and a reagent are transported to reaction-chamber E at the reservoir B, C, and D by rotating a disk with the revolving speed of 1-30,000 rpm, and opening the valve which controls the reservoir B, C, and D. A reaction chamber is heated after mixing by supplying the Peltier heating construction element by whether it is the paddle gap arranged to a disk or a device so that a reactant may be incubated for 1 hour and the reaction chamber may be specifically heated at 37 ** in reaction-chamber E. As a result, the reaction mixture of a certain quantity is moved to an electrophoresis unit by opening the valve in reaction-chamber E which rotates the disk with the revolving speed of 1-30,000 rpm after digestion, and results in the capillary-electrophoresis unit F. Being [it] digestive DNA is moved to the electrophoresis unit F, and a lot of reaction mixtures, especially 10microL are measured with the length of the time which the valve in reaction-chamber E is opening, and the combination of the speed which the disk rotates. Hereafter, capillary electrophoresis is completed and fractionation of optical or the DNA kind hereafter detected using other means indicated in Example 2 is carried out as indicated in the Example 11.
Example 6 DNA synthesis The disk and device which were indicated in Example 1 as above-mentioned are used, and oligonucleotide DNA synthesis is performed. Composition is attained by gradual transfer of control porous glass (CPG) through a series of reaction chambers containing a reagent required for phospho friend DAITO DNA synthesis. By the valve of the piece use (single-use) mutually connected with a reaction chamber, a reagent and CPG are delivered one by one to a reaction chamber. Each disk has many synthetic reaction chambers which generate the oligonucleotide (namely, 100 -150 base) which shows length similar to the

length of the oligonucleotide manufactured by commercial DNA synthesis directions. The schematic diagram of the structure of a disk is shown in drawing 23 A.
It is based on a user or load of the CPG (therefore, 3' extension of an oligonucleotide is specified) holding the first base of arrangement is carried out to sample inflow port A by an automation means. Then, CPG is moved to the reaction chamber which contains trichloroacetic acid (TCA) in acetonitrile (CH_3 CN) by rotating a disk with the revolving speed of 1-30,000 rpm. A room temperature performs detritylation of a nucleotide in a specific time interval, especially 1 minute. Then, it is too small, and although passage of CPG is carried out, a reagent is fractionated from the first reaction chamber by opening the valve which has sufficient inside diameter to eliminate a TCA content mixture. Since it is known that the deprotection of the base by detritylation will generate a coloring product (orange), and that intensity is a measuring method of extension of a reaction, it is provided beneficially that the optical means for measuring the absorbance of this eluting agent is recorded on the microprocessor/memory of a device. After fractionating a reaction mixture, CPG is rotated by the cleaning chambers containing CH_3 CN, and a chamber includes an above-mentioned mixing means if needed. CH_3 CN is fractionated after washing in the outflow reservoir controlled by a size alternative valve as above-mentioned, and GPC is turned to the second reaction chamber. It is a solution containing one of the four phospho friend DAITO (G, A, T, or C) corresponding to the next position in an oligonucleotide chain which is mixed with CPG in the second reaction chamber. mixing the reaction mixture in the second reaction chamber -- and a prescribed period interval -- it is made to react especially for 3 minutes Then, a reaction mixture is fractionated as above-mentioned and GPG is rotated by cleaning chambers including CH_3 CN and a mixing means. flowing out, and fractionating CH_3 CN in a reservoir after washing, and rotating CPG to the third reaction chamber containing iodine, water, pyridine, and the oxidation mixture of a tetrahydrofuran -- here -- a reaction mixture -- a regular time interval -- it incubates especially for 1 minute. It flows out, a reaction mixture is fractionated in a reservoir, and CPG is turned to the cleaning chambers containing CH_3 CN. After washing, it flows out, and CH_3 CN is fractionated in a reservoir, and CPG is rotated together with two ingredient "capping" reagents by the fourth reaction chamber. A capping reaction is performed for a regular time interval, especially 1 minute. After a reaction is completed, it flows out, a reaction mixture is fractionated in a reservoir, and GPG is turned to the cleaning chambers containing CH_3 CN. Then, it flows out, CH_3 CN is fractionated in a reservoir, GPG is turned to the fifth chamber containing TCA, and this includes the beginning of another cycle. A cycle is repeated by pushing in four reaction chambers of a series of continuation, and transporting CPG until the arrangement programmed beforehand is

compounded thoroughly. Then, CPG is turned to the reaction chamber containing dark ammonium hydroxide, and it heats at 60 ** in a regular time interval, especially 6 hours, and deprotection of the DNA molecule is carried out from a CPG carrier, and it is cut in the meantime. A user or an automation means removes the completed oligonucleotide.
A disk provides a series of reaction chambers connected mutually, and includes four the reactions and cleaning chambers per nucleotide which should be added by the oligonucleotide chain. Load can be carried out to the disk generating a specific oligonucleotide, or each reaction chamber 2 contains four nucleotide bases respectively, and it can be in contact with the reagent reservoir tied to the reaction chamber by the individually controllable valve. Practical use of a suitable valve is controlled by this example in each stage of this cycle by the signal from a device. A disk is provided with these multiplex resultant arrangement. Carrying out simultaneous composition of two or more oligonucleotides is also provided. The schematic diagram of the disk arranged for multiplex oligonucleotide synthesis is shown in drawing 23 B. The reagent delivered by using the valve for two way types of other uses by CPG which is contained in a reaction chamber toward the circumference of a disk, and which carried out load beforehand can also perform DNA synthesis as roughly illustrated by drawing 23 A. In these disks, an interval is vacated in the center of the disk in which a diameter of 120 mm is shown at 150 micrometers, and the reaction chamber [to the same grade as the reaction chamber of 1250, and] by which 100nL can be included is manufactured. The reagent reservoir containing dosage sufficient on a disk to supply a reagent chamber is beforehand filled with phospho friend DAITO, CH_3CN, TCA, an oxidizer, and a capping reagent. The linker coupled directly with the trityl addition CPG or a reaction chamber is beforehand added to a disk in a similar manner. The reagent of the amount of microliter is enough for each reaction. TCA is turned to each first reaction chamber, and the time of the regular length, it is made to react especially for 1 minute, and flows into the circumference of a disk after that (abandonment), and a chamber is rotated. CH_3CN washing is turned to each reaction chamber, and is discarded after that. turning A, C, G, or T phospho friend DAITO to the reaction chamber which needs the base by utilizing an alternative valve -- and a regular time interval -- it is made to react especially for 3 minutes, and the thing which rotated is excluded. CH_3CN washing is turned to each reaction chamber, and is turned to an abandonment chamber after that. Turn an oxidizer mixture to each reaction chamber, and it is a regular time interval, is made to react especially for 1 minute, and is discarded after that. Each reaction chamber is rotated and another CH_3CN washing is discarded after that. Rotate each reaction chamber, and are a regular time interval, and the capping reagent of two ingredients is made to react especially for 1 minute, and is discarded after that. About each cycle, each reaction chamber is rotated and last CH_3CN washing is turned to an abandonment chamber after that. The cycle is repeated in a number of

cycles programmed beforehand until each oligonucleotide is compounded thoroughly. Then, turn dark ammonium hydroxide to each of a reaction chamber, and are the time of the regular length and it is made to react especially for 6 hours, and it is made to react at 60 ** until it carries out deprotection of the perfect DNA and cuts it from the base material. Then, DNA is removable by hand control or an automatic means. On the contrary, the combination of an oligonucleotide with a CPG base material is chosen so that an operation of ammonium hydroxide may be resisted, and as a result, a deprotection oligonucleotide remains in the reaction chamber combined with CPG.

The arrangement of a reagent reservoir and a reaction chamber suits the synthetic reaction containing a peptide synthesis form by it which can also provide a peptide synthesis disk as above-mentioned.

Example 7 enzymatic DNA sequencing The nucleotide sequence of a DNA fragment is measured by the enzymatic sequencing method of sanger using the disk manufactured as indicated in the above-mentioned Example 1 (refer to drawing 24). In a sample inflow port, it is manual or the suitable primer of template DNA (200pg in 250mL) and 100 femtomoles is titrated by automatic steps. Then, DNA is moved to the mixing chamber containing a termination solution (namely, solution containing the nucleotide G, A, and T of a dideoxy gestalt, or C) by rotating a disk with the revolving speed of 1-30,000 rpm. A termination solution contains solution 100mL which generally contains five picomoles of each deoxy nucleotide, 0.5 picomole of dideoxy nucleotides combined with one fluorescent labeling in covalent bond, the 90mM tris- HCl (pH 7.5), 45mM MgCl2, and 110mM NaCl. With the revolving speed of 1-30,000 rpm, make it rotate and a disk in a reaction chamber, By generating the reaction mixture in which the buffer constituent of the last concentration which is the 26mM tris- HCl (pH 7.5), 13mM MgCl2, 32mMNaCl, and 6mM DTT is shown, The contents of the mixing chamber are moved to the reaction chamber containing T7 DNA polymerase (or instead of Taq polymerase of 0.1 unit) of 0.1 unit, and 0.1M dithiothreitol (DTT) of 20nL. It is to 37 ** (.) about a reaction chamber by the resistance heating component positioned in the device which is indispensable to a disk or heats a reaction chamber specifically instead. Or instead, about Taq polymerase, it heats at 65 **, and incubates especially for 1 minute the time of the regular length.

A reaction product is turned to equivalent weight of 90% formamides / EDTA, and is heated for 1 minute at 90 **, and is turned to the capillary-electrophoresis unit on a disk. Then, capillary electrophoresis separates the dideoxy nucleotide end DNA fragment of the lot containing a reaction mixture, and the arrangement of a fragment is measured by laser-guidance fluorescence detection as above-mentioned. These multiplex synthetic arrangement is included and the disk which simultaneous composition of two or more dideoxy nucleotide end oligonucleotides is made is also provided. A presumed nucleotide sequence is measured from

the arrangement which measured from the pattern of the fluorescent signal detected and was derived by the device microprocessor from the patterns and these data of the detected fluorescent signal.

Example 8 solution-layer composition and analysis The disk of a statement is used for Example 1 and various colorimetry chemical analyses are conducted. For example, the disk for performing solution assay which measures the iron concentration in a testing liquid (it is (like an industrial distillate)) using a standard color test is provided (refer to drawing 25). The device which has a reagent reservoir containing 12N HCl of 40uL, the 10% hydroxylamine hydrochloride of 100uL, the sodium-acid-citrate buffer solution (pH 4) of 100uL, and the 0.02% 1,10-phenanthroline of 50uL is produced. These reagents are continuously added by the reaction chamber by opening the valve which controls the flow from each reagent reservoir by arranging a reagent reservoir as it is shown in drawing 25 as a result. The reagent transfer to a reaction chamber is attained by rotating the disk of Example 1 with the revolving speed of 1-30,000 rpm, and centripetal force moves each reagent solution to a reaction chamber from the reservoir by it. It lets a sample port (A) pass, and a sample is introduced, and it is delivered by the reaction chamber in capillarity as shown in drawing 25. The valve to the reagent reservoir (B) containing HCl is opened wide, and acid is added in the sample. A sample is incubated for 10 minutes and the existing total iron oxide is dissolved. Chloride hydroxy amine (reservoir D) and citrate (reservoir E) are further added to a reaction mixture. A reaction mixture is incubated for 20 minutes and perfect reduction of the iron 11 is secured from the iron 111. Next, a 1,10-phenanthroline is made to shift from the complex iron 11 from the reservoir F, and coloring output. The solution is incubated at 30 ** for 30 minutes, and coloring of a color is completed. Colorimetric measurement in 520 nm is performed after an incubation process in "reading" cell (G) connected with the reaction chamber through the valve G.

Example 9 solid-phase (surface/colloid) composition / analysis It manufactures as indicated in the Example 1, And an oligonucleotide, a single stranded DNA, or double helix DNA is combined with reactant particles (it is (like a bead, a magnetic particle, or the substance for chromatographies)) in covalent bond using the disk shown in drawing 26. letting a sample introduction port pass by an illustration example -- the carboxyl activation magnetic particle (the State of Massachusetts.) of the amount of 25uL aliquots tic [of hula MINGAMU (Framingham MA) / pre SEPUCHIBU diamond GUNOSU] (PerSeptive Diagnostics), and biotechnology -- a mug -- (BioMag)4125 is added to the disk. By fractionating the original solution through a valve in an outflow or an abandonment reservoir, the particle is moved from a start solution to 0.1M imidazole (pH 6) of 50uL, and the valve is produced by it in order to prevent the loss of a magnetic particle from a reaction chamber. Then, an imidazole solution is added from the imidazole reservoir on a disk to a particle reaction chamber, and the transfer of imidazole is controlled by a valve. The original magnetic particle solution is fractionated and

the power of both which transport imidazole to a particle reaction chamber from an imidazole reservoir is provided by rotating a disk with the revolving speed of 1-30,000 rpm. When a disk rotates about drawing 26 especially, at the end of a reaction chamber, by a funnel, it produces as a pellet, and a high-density magnetic particle precipitates and is discarded. Then, the valve which controls the chamber of the imidazole reagent containing 0.1M imidazole 50uL is wide opened under a fraction level, although it is on the particle, and it lets a valve pass and the particle is made to shift to a reaction chamber and the following fraction reservoir. This fraction process is repeatable many times until it exerts change by the liquid phase on a desired constituent. In particular, three exchange is enough. By controlling imidazole, and instead, adding and removing from a group's reagent reservoir or an independent reagent reservoir big enough although sufficient imidazole for the complete cycle of exchange is included in instead of, A magnetic particle is made to exchange suitable arrangement of a reagent and a reaction chamber for an independent reaction chamber.

After a replacement cycle is completed, a magnetic particle is made to shift to the following reaction chamber containing the dry 1-ethyl-3-(3-dimethylaminopropyl) carbodiimide (EDAC) of 250ug. In order for a reagent reservoir to dissolve EDAC, before adding particles, it contains the 5' amine-ized DNA oligonucleotide of 170OD (170ng) in the 0.1M imidazole solution of 50uL. Then, particles are added through a valve to 0.1M imidazole of about 100 uL(s). A magnetic particle is added to a reaction chamber, and a device is stopped, and it incubates at 40 ** for 6 hours. Heating can be brought about according to the heat source (it is (like peltae heating apparatus)) positioned in a device by the arrangement which it provides on the disk or specific generation of heat of a reaction chamber is made. As latter substitution, a disk is stopped in the position decided beforehand based on the device which secures the singularity of the heat of a reaction chamber.

It exchanges for the water of the 100uL section by washing particles after an incubation, and fractionating as above-mentioned, while the disk is rotating. Three exchange is performed in order to refine particles generally. Output is collected with sufficient convenience at the tip of the disk which can approach easily [continuous use]. The disk which simultaneous composition of two or more particle Mr. oligonucleotides is made is also provided including these multiplex synthetic arrangement.

The disk indicated in the Example 1 which extracts a little melted objects or ingredients of a mixture from the solution which replaces example 10 minute-amount extraction system HPLC or other conventional biochemical separation methods (refer to drawing 27). A compound (it is (like octanol)) covers by a standard means to give the surface which shows an affinity especially to a disk for a channel about the ingredient of a mixture especially a complex compound, or a biochemical mixture. It is a disk made from silicon and is activated by filling the surface of a channel with 95 ** and filling a chamber with aquosity epoxysilane for 1 hour, for

example. At 95 **, it incubates for 1 hour, and it continues, and distilled water washes a disk about 5 times, and unreacted Silang is removed, and unreacted octane is removed [aminooctane is added to a solvent and / solvent washing is carried out and].
The sample mixture containing the ingredient which should be carried out melting is added to an injection port, and it moves with the separation channel covered by rotating a disk at 1-30,000 rpm. The sample which opened the reagent reservoir wide at the entrance of the channel, and was held at the covering channel over a collection reservoir is used for being eluted. Then, separation sample ingredients are collected in an exit port.
Example 11 free-regions capillary electrophoresis It is produced as indicated in the above-mentioned Example 1, and the disk with which it was roughly expressed to drawing 28 performs free-regions capillary electrophoresis. Especially 75 micrometers x a 5 micrometerx25-mm capillary tube (capillary tube) (it is recognized that it adjoins within the accuracy restricted to the time when all the fields produce an ingredient like the capillary tube of a disk) are etched by monotonous printing on a glass disk. An electric contact is made by putting platinum on the non-etching surface of glass using a standard method, before sealing the crowning of a device. A separation channel is crossed by 15-mm sample introduction channels, and is positioned 3 mm apart from a buffer solution reservoir. The target channel has an electric contact at one which controls a sample inlet port and the sample use to the capillary tube at one end of the ends.
A separation channel is filled up with operation of the capillary electrophoresis on a disk from a buffer solution reservoir by rotating a disk at speed of 1-30,000 rpm. Once it fills up with a channel, rotation will be stopped until a pressure needs to be again put on a channel. A sample is introduced by applying voltage between the analyte entrance on a chip to cross, and an analyte outlet channel (refer to drawing 28). While separation channel ports have floated, the drop of 50V potential is carried between a sample entrance and an exit port. A sample contains the solution of the 2mM tris HCl (pH 8) (especially manufactured from chloride salt) which has 5mM EDTA, 1mM Mg^{2+}, and 1mM Ca^{2+}. The buffer solution in a flow includes the 10mM tris HCl (pH 8) and 5mM EDTA. Then, separation which faces to a cathode is performed by applying 250V in accordance with a separation channel by applying potential to a sample reservoir. From an inlet port, it is a 2-cm position and is a source of UV light (mercury-vapor lamp), for example.
And separation is observed by positioning a device to the target capillary tube channel, and observing UV absorption by 254 nm using an optical die auto detector.
Example 12DNA electrophoresis The disk produced by the above-mentioned Example 1 as the statement performs gel electrophoresis. About this use, a gel medium is produced to a separation channel. However, such a gel medium should be protected from the shear force which rotates a disk and is developed, while making a sample or buffer solution shift to an

electrophoresis channel. Therefore, a gel restoration capillary tube is connected on a disk, and is arranged with sufficient convenience as roughly shown in drawing 29. As a result, it is only that gel receives shearing force from the pressure which derives centripetal force during rotation when the fluid reservoir touches the capillary tube during rotation of a disk. By the remainder, the plain geometry of a disk prevents a flowing force study pressure on a capillary tube. This is more advantageous than a standard capillary-electrophoresis system. Here, the amount of buffers is the reservoir quantity which needs to avoid the flowing force study flow carefully adjusted before each flow. It is not so easy for a flowing force study pressure to control. A buffer solution reservoir is positioned on the flat surface of a separation channel, and this is also excellent in the capillary electrophoresis performed by the disk of this invention from the electrophoresis performed on the microchip easily influenced by the fluid passage which the flowing force study pressure required by it.

By the disk of this invention, gel electrophoresis is performed and a DNA fragment including a double helix PCR fragment, an oligonucleotide and a single strand, and a deoxy nucleotide terminal enzyme DNA sequencing ingredient is separated. The system is produced as shown in drawing 29. The disk possessing the polyacrylamide gel which concentrates on the separation channel etched into the disk in very small quantities, and is arranged is manufactured. Polyacrylamide gel is manufactured from the un-polymerizing-ized solution of 7M urea, 45mM tris-borate buffer solution (pH 8.3), 1mM EDTA, 9% acrylamide, 0.1%TEMED, and 10% ammonium persulfate. A disk can be manufactured in a separation channel by mixing an ingredient (here, it is recognized that un-polymerizing-ized polymerization polyacrylamide is easily influenced by photocatalyst polymerization-ization in storage), and introducing especially TEMED and ammonium persulfate into the mixture. Enough gel mixtures for a separation channel are added by rotating a disk at 1-30,000 rpm by opening a valve in a separation channel from a mixing chamber. A disk is stopped by being filled up with the separation channel which gel polymerization-ization is made. In order to begin to pour to a channel the buffer solution obtained from a big buffer solution reservoir and for ****** to remove air bubbles and an unpolymerized monomer by the outlet side of the channel controlled by the valve just before a polymerization was completed, it is begun to pass an outlet channel. The same process is performed by the entrance side of gel.

In order to introduce a DNA sample, a valve is opened from the inlet port which maintains the solution of a DNA fragment, or a sample is instead taken with a pipette directly on a disk. A sample is put on a separation channel by making it shift to the channel which rotated the disk at 1-30,000 rpm, and filled up a sample and buffer solution with buffer solution. When introducing a sample into a separation channel and a sample inlet channel, before putting in the separation matrix which is similar by the concentration of a sample between the conventional slab gel electrophoresis, a sample is condensed by gel / buffer solution interface.

Electrophoresis is performed by 250 V/cm which is effective in separating a DNA fragment, and a cathode (positive electrode) is positioned by the sample inlet channel at the exit end of a channel end. A laser introduction fluorescence detector is positioned in the exit of the gel restoration capillary tube chamber which detects a sign DNA fragment in the Example 2 as above-mentioned.

The spectrophotometric measurement about the rotational structure of extended this invention of example 13 spectrophotometer course length can be limited to the relatively small path length supplied by the spectral-luminous-intensity lighting which crosses the crossing size of a disk. It depends for the intensity of the absorbance of a solution on the depth of an absorption layer, and (as being indicated by the lambert Bier's method) the concentration of an absorption molecule.

Although the measuring cell in the microsystem platform which this invention rotates expresses short crossing path length, the path length of the outside which let the disk pass may be a large area (it is **** dividing cm versus millimeter). Spectrometry can be increased by introducing light through a detection chamber in the lateral surface.

One arrangement which provides the lateral surface with a crossing exposure is shown in drawing 16. Light is perpendicularly hit to a disk. A mirror is positioned in angle of 45 degrees to the direction of an irradiation beam, and light is turned outside by it through a detection chamber. Light passes through a detector cell and is reflected in 45-degree another mirror by a photo diode or photosensitive detector like a photo-multiplier. These mirrors can be inserted in a disk and can carry out surface treatment by other substances which are thoroughly fabricated by the disk or constitute a plastic or a disk.

The method for identifying the specific cell or cellular type in an example 14 cell count, identification, and observation biological sample is provided.

For example, it has the surface which made Escherichia coli cover the surface with a specific monoclonal antibody in absorption, and the micro platform of this invention is manufactured. The remaining parts are protected by BSA. On a disk, a cow's milk sample is introduced, and the reaction chamber which has the surface covered with the antibody is contacted, and it is carried. Cow's milk incubates for 30 minutes by this chamber. Then, a microsystem platform is rotated and the material which is not desired is removed. The buffer solution of a suitable quantity to wash a microsystem chamber is added to the surface or a chamber through a micro channel from the reservoir containing washing buffer solution, and above-mentioned buffer solution is emitted by the opening of a centrifugal force and a micro valve. In a useful example, washing buffer solution includes the Escherichia coli-specific monoclonal antibody over which the bridge was constructed by the enzyme (it is (like peroxy DASE)). Then, an incubation is performed for 5 minutes. Rotate a disk again by the opening of a suitable micro valve, and a washing solution is removed from a chamber, And the solution containing an enzymatic

substance (tetramethyl benzidine and hydrogen peroxide) is added, and it holds to the reagent reservoir connected with the reaction chamber with the minute channel controlled by the micro valve after that. The quantity of the Escherichia coli combined with the reaction chamber is quantified about the quantity of the detected enzyme activity, and is measured by the spectrum optical target by existence of an optical absorption product or the absence of an optical absorption substance.

The above indication emphasizes a specific example with this invention, and if it is in the concept and range of this invention, he should understand all the ornamentation or changes equivalent to it.

[Translation done.]

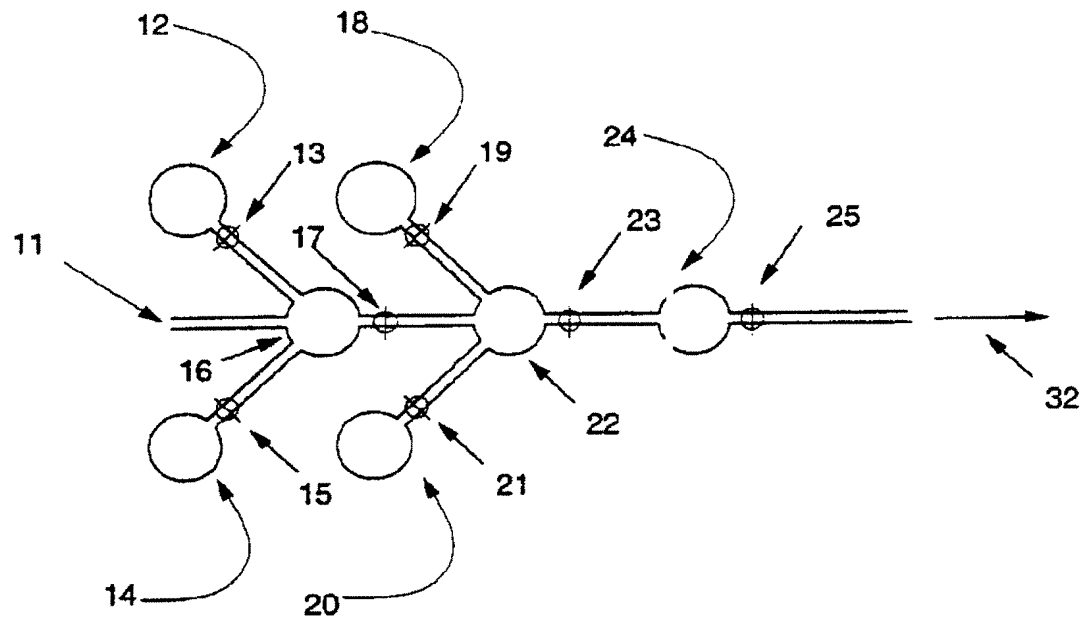
* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]

FIG. 1A



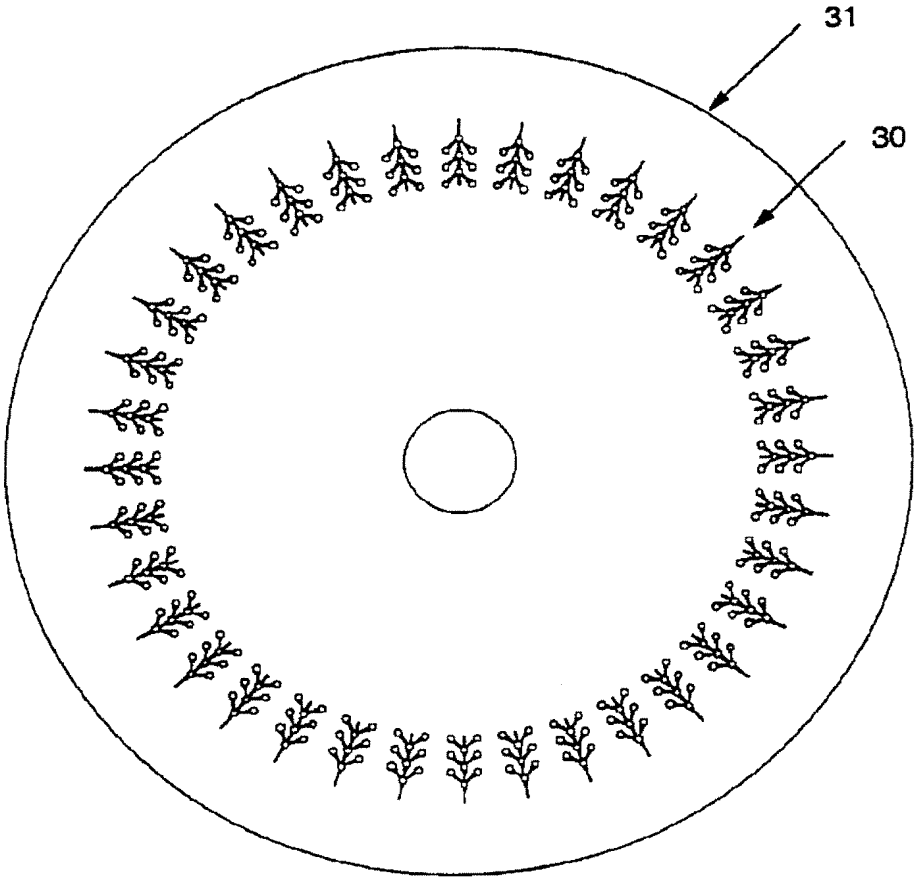


FIG. 1C

[Drawing 1]

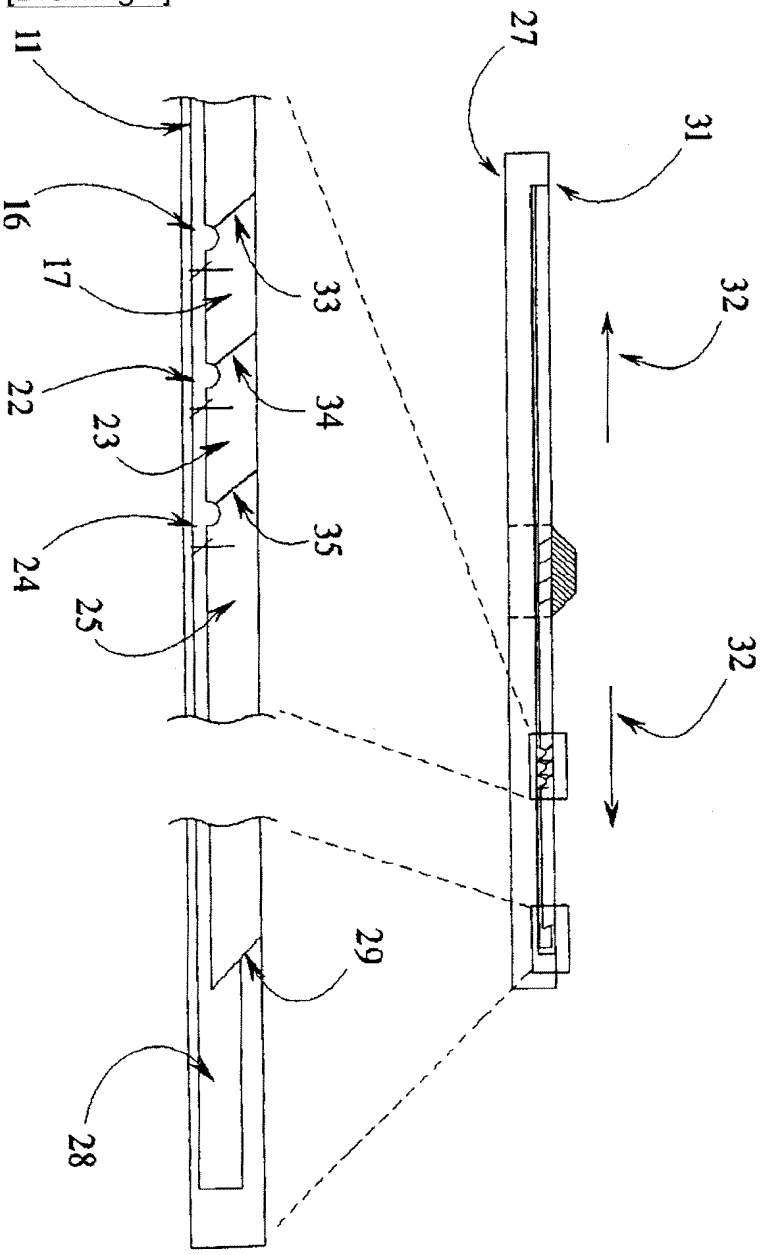
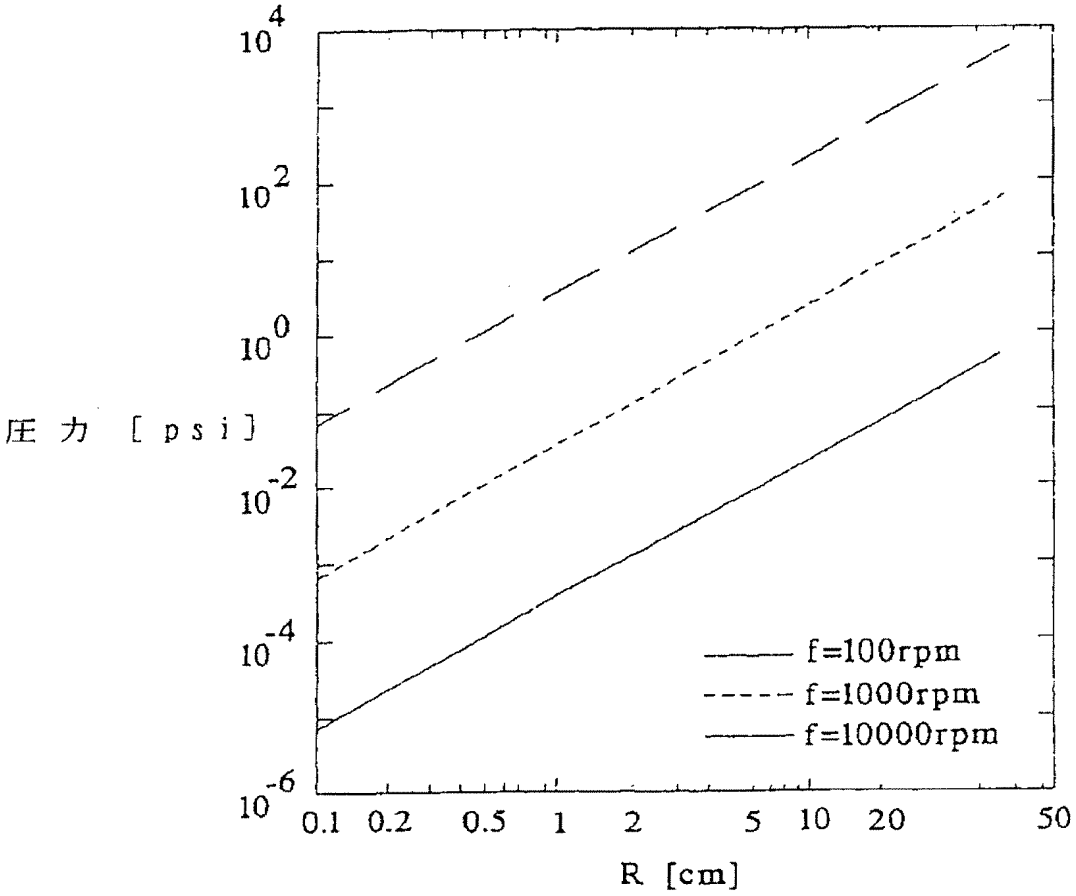


FIG. 1B

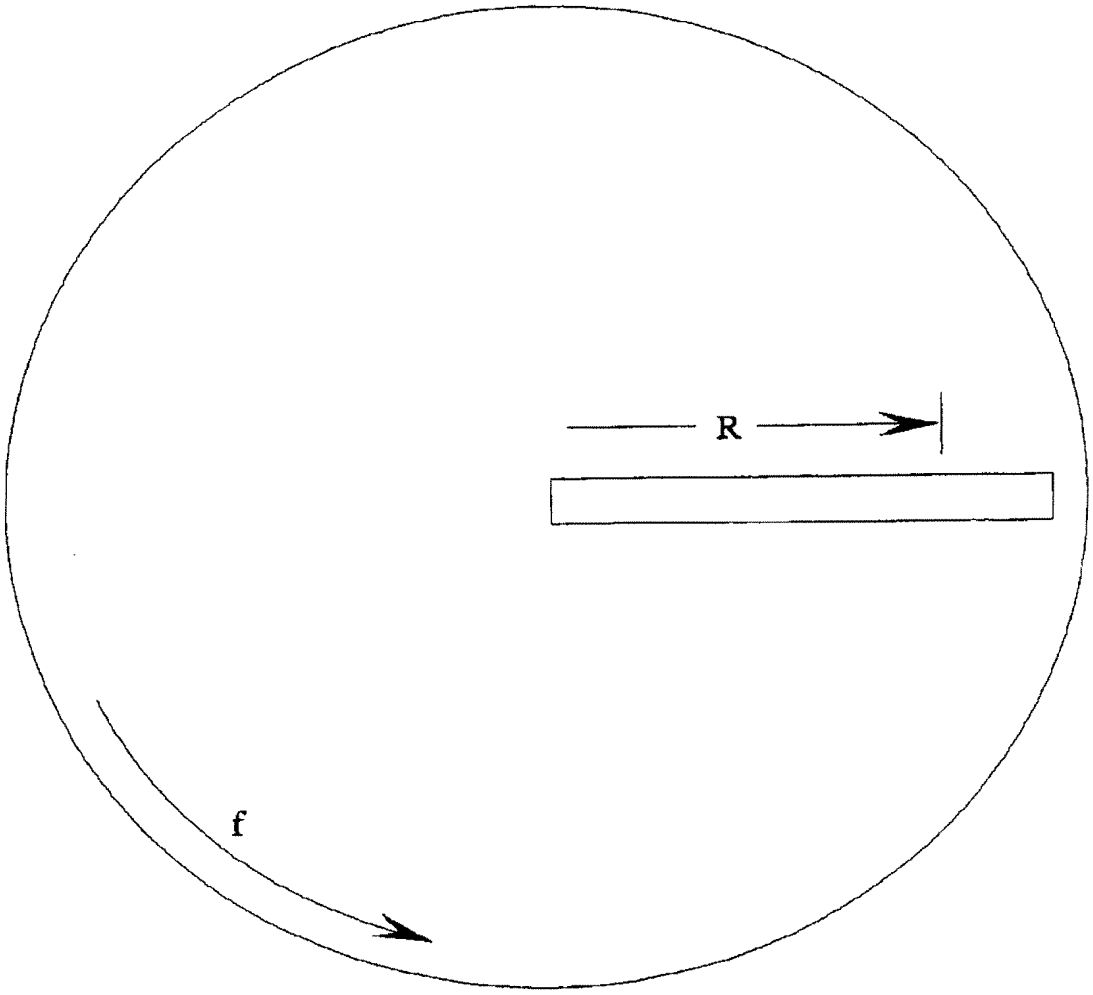
[Drawing 2]

FIG. 2A



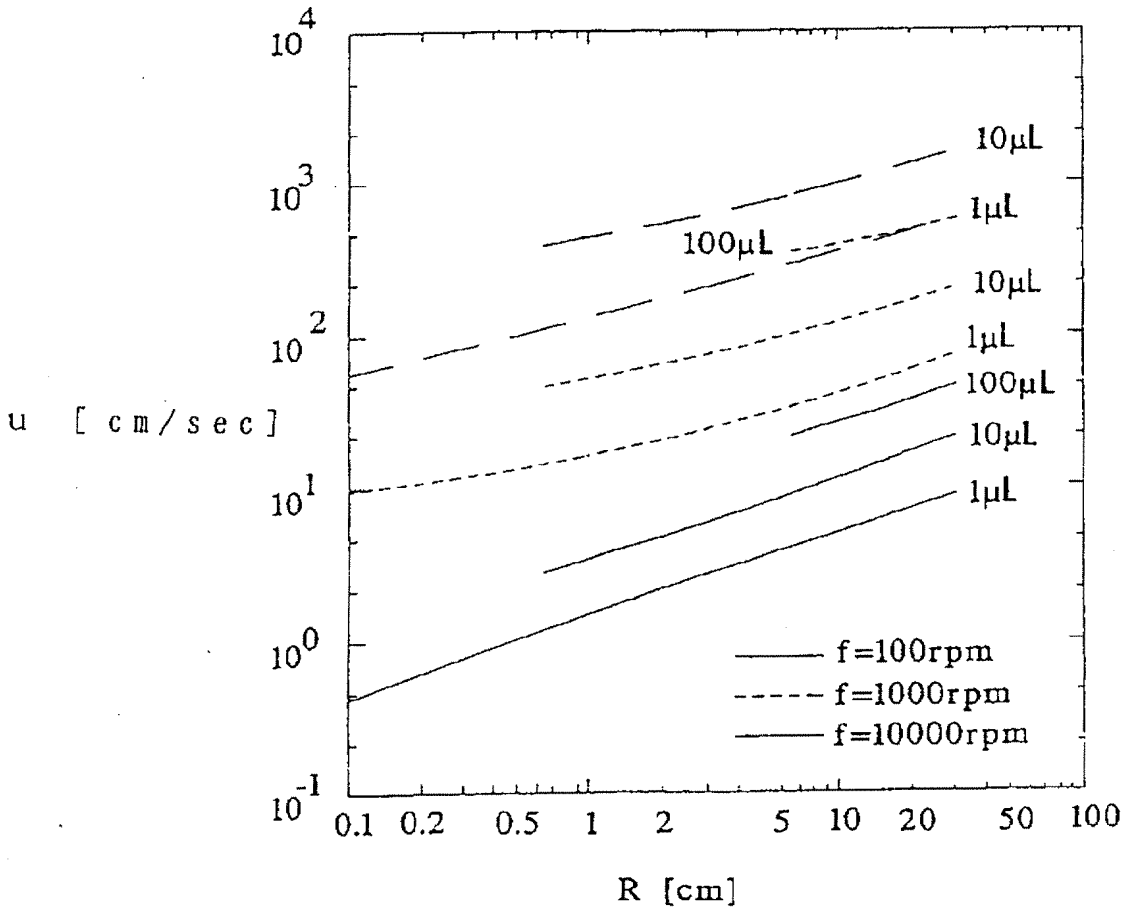
[Drawing 2]

FIG. 2B



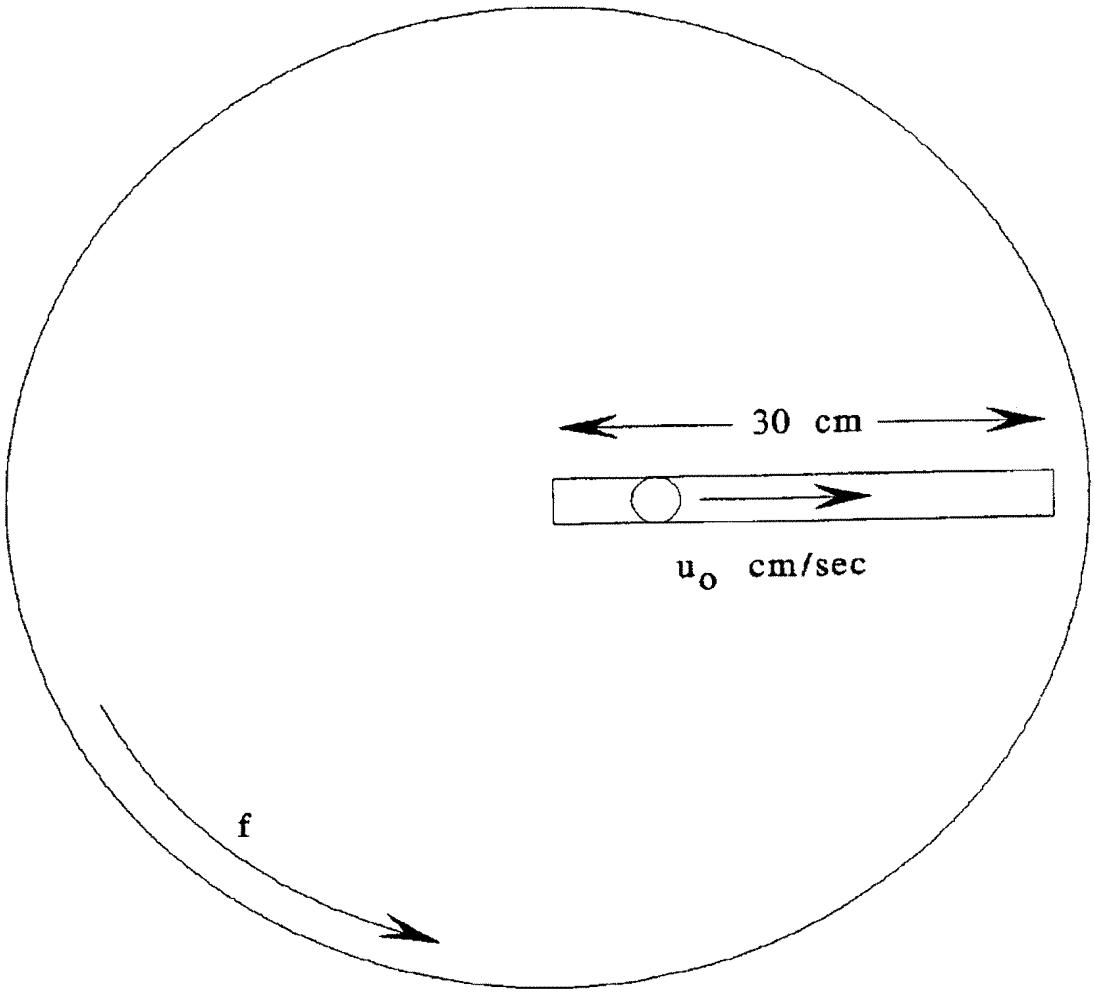
[Drawing 3]

FIG. 3A



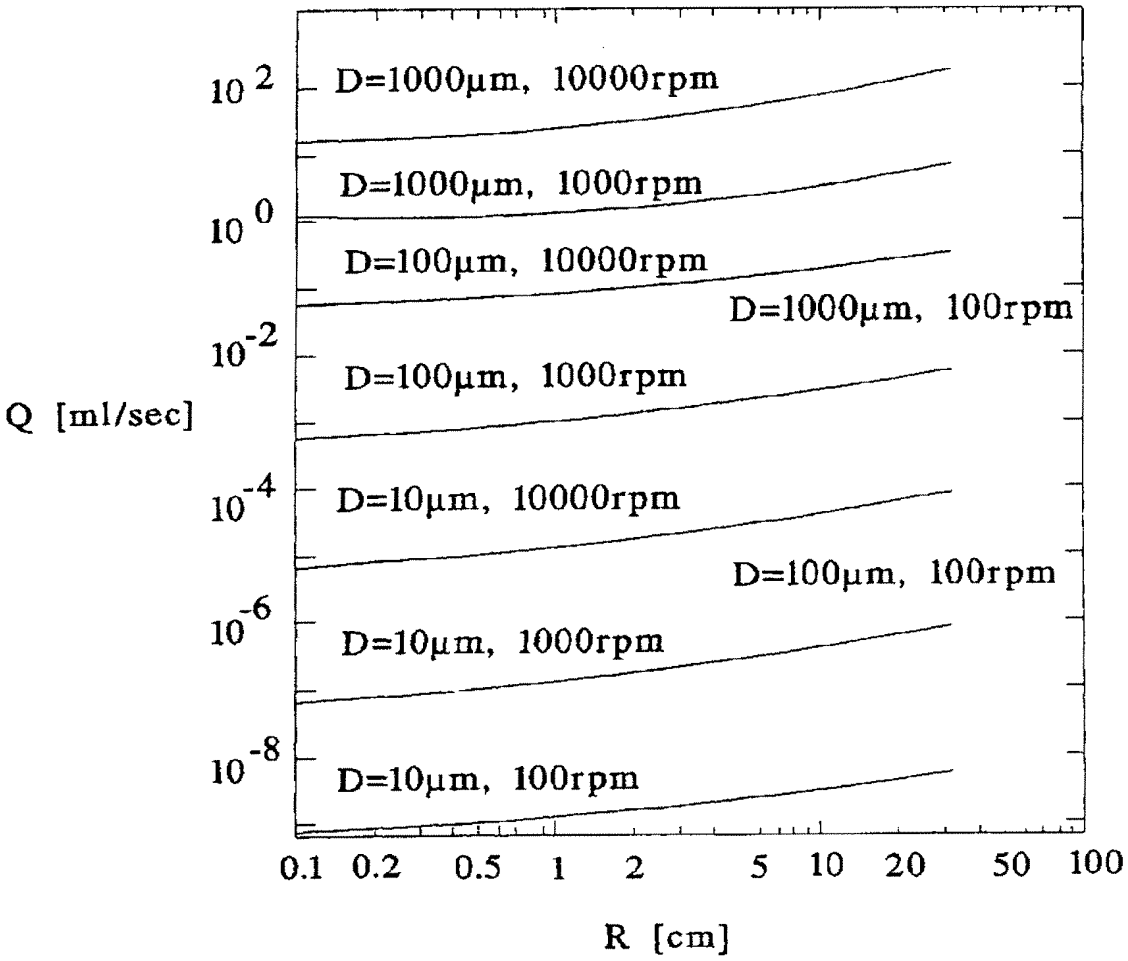
[Drawing 3]

FIG. 3B



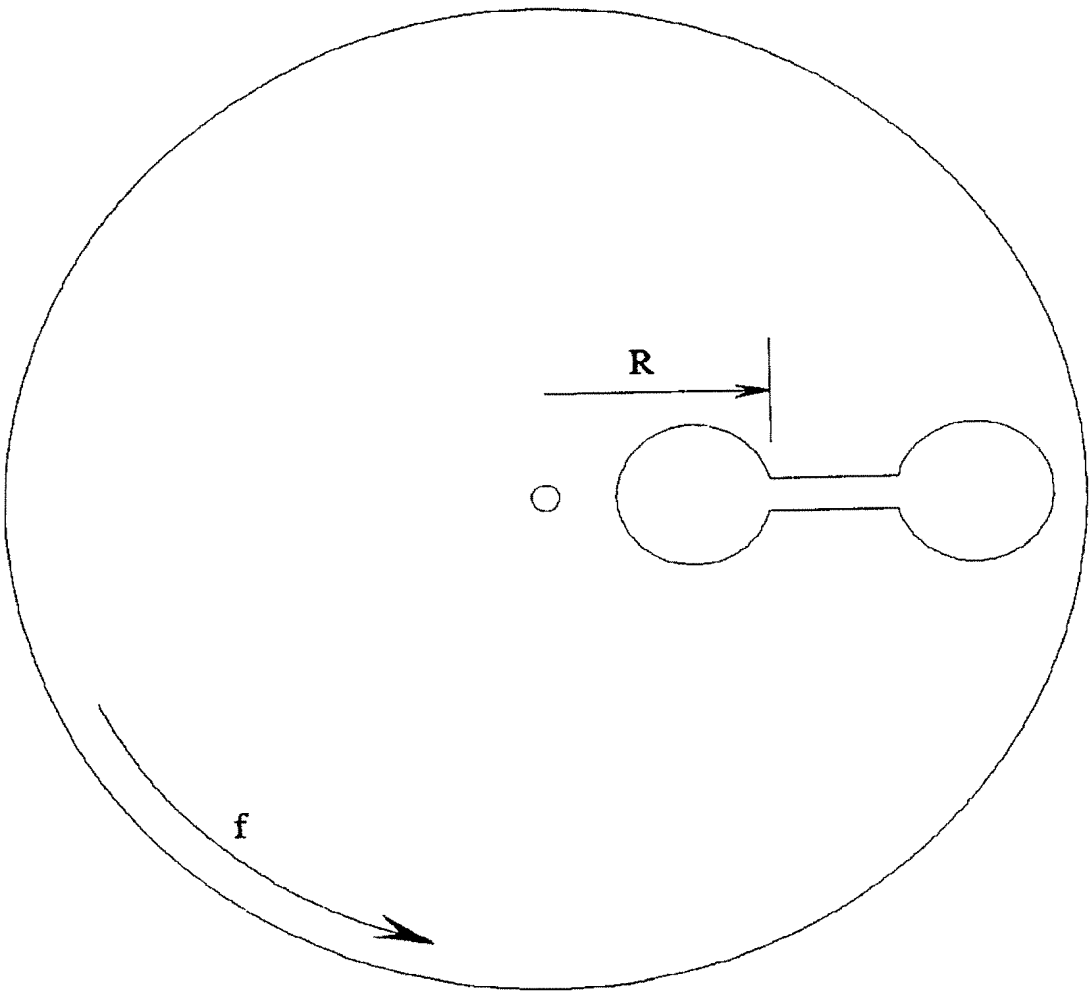
[Drawing 4]

FIG. 4A



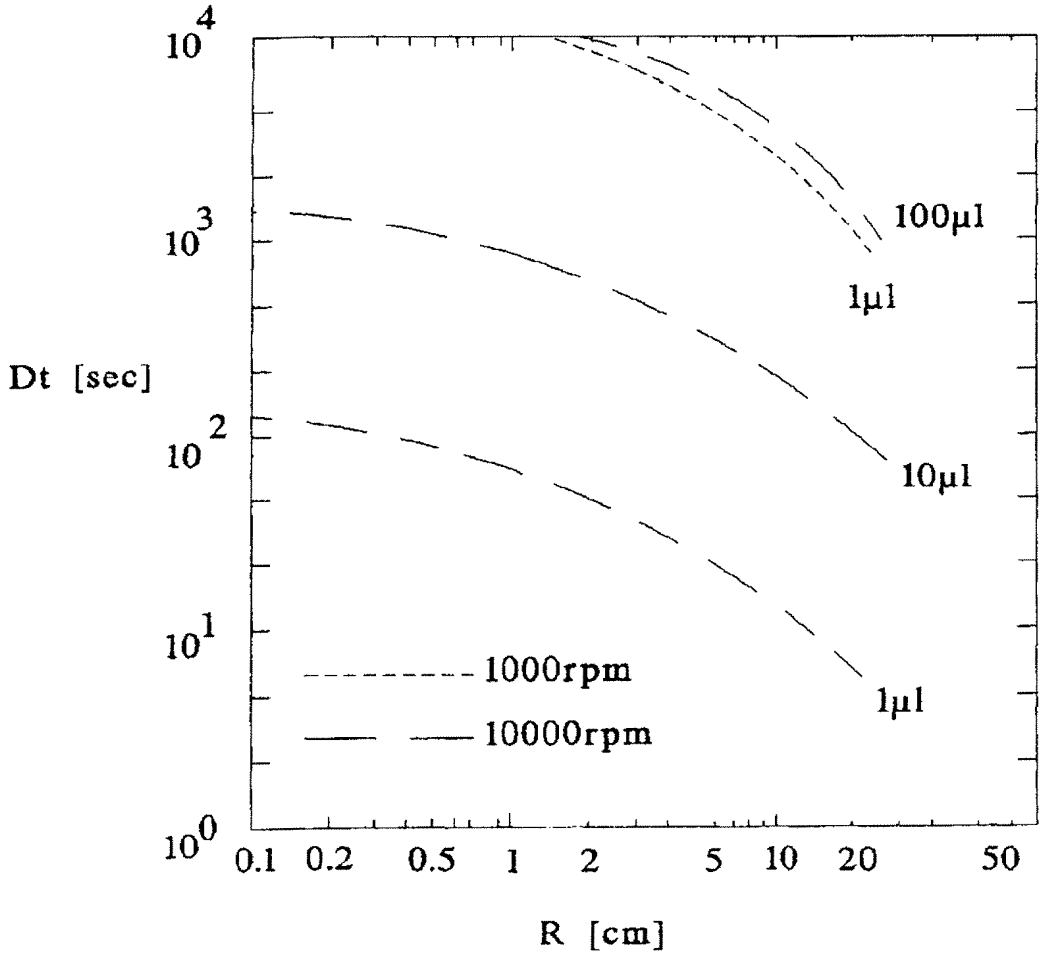
[Drawing 4]

FIG. 4B



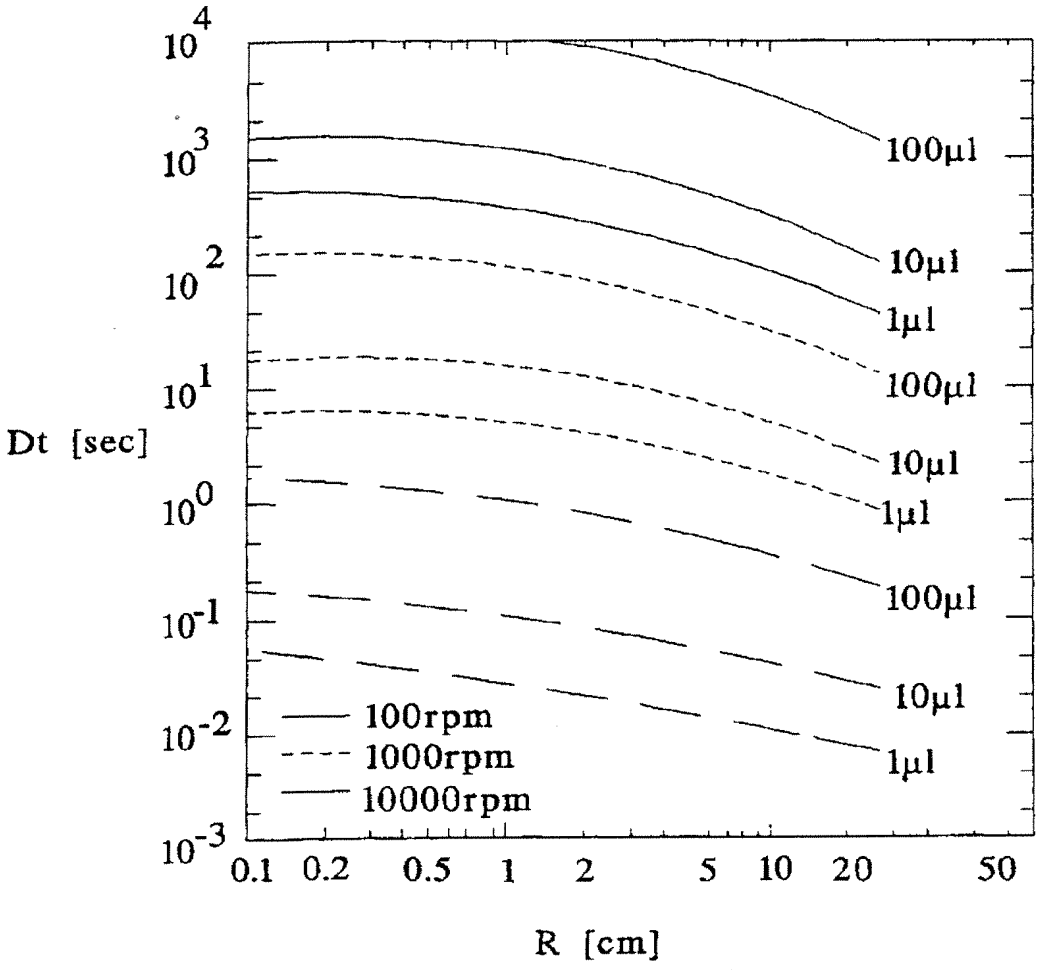
[Drawing 5]

FIG. 5A



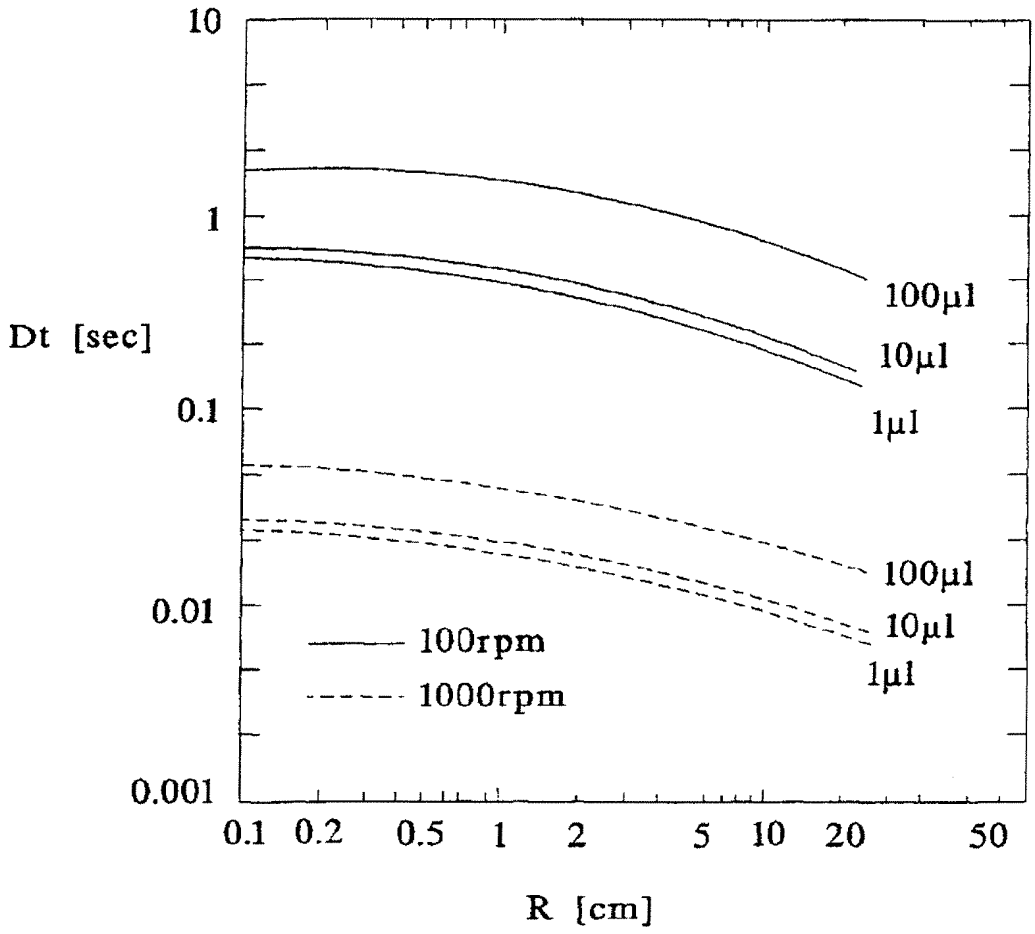
[Drawing 5]

FIG. 5B



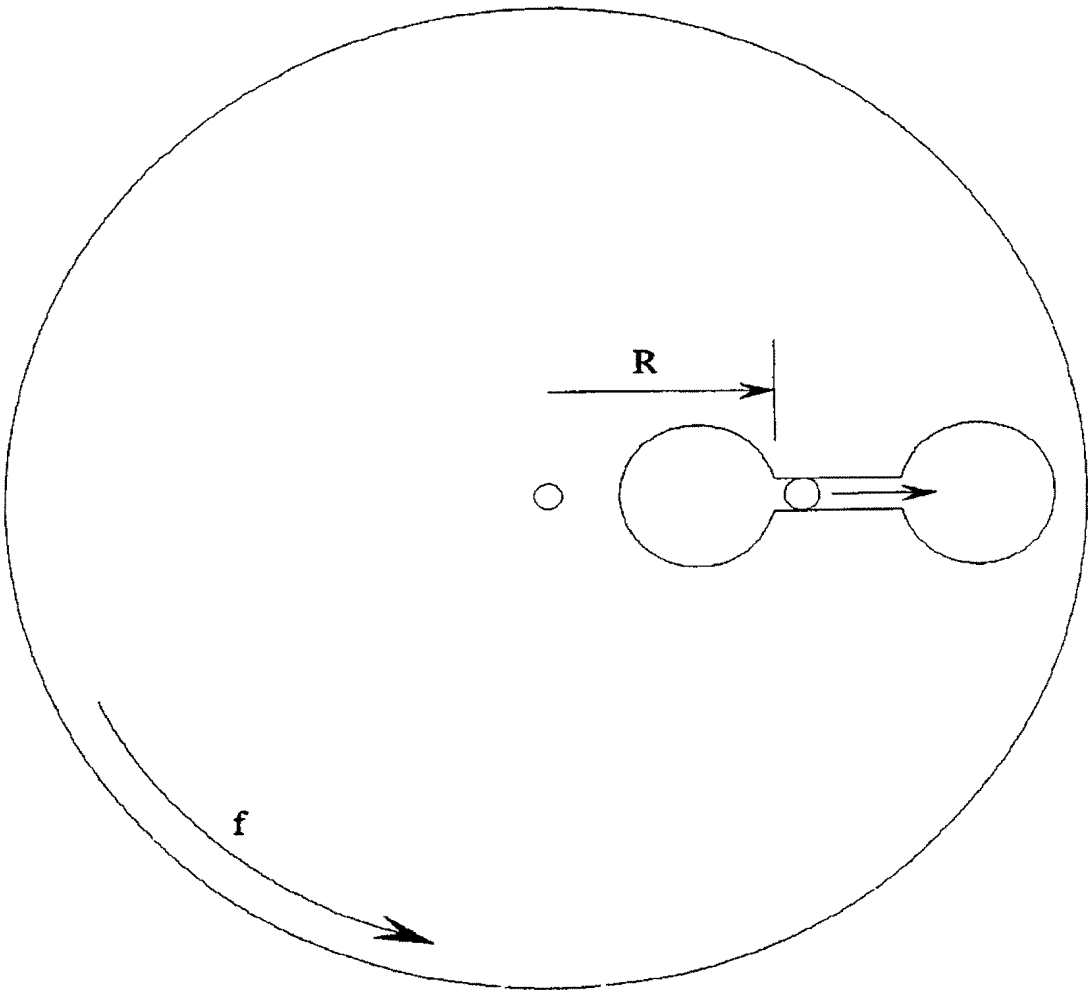
[Drawing 5]

FIG. 5C



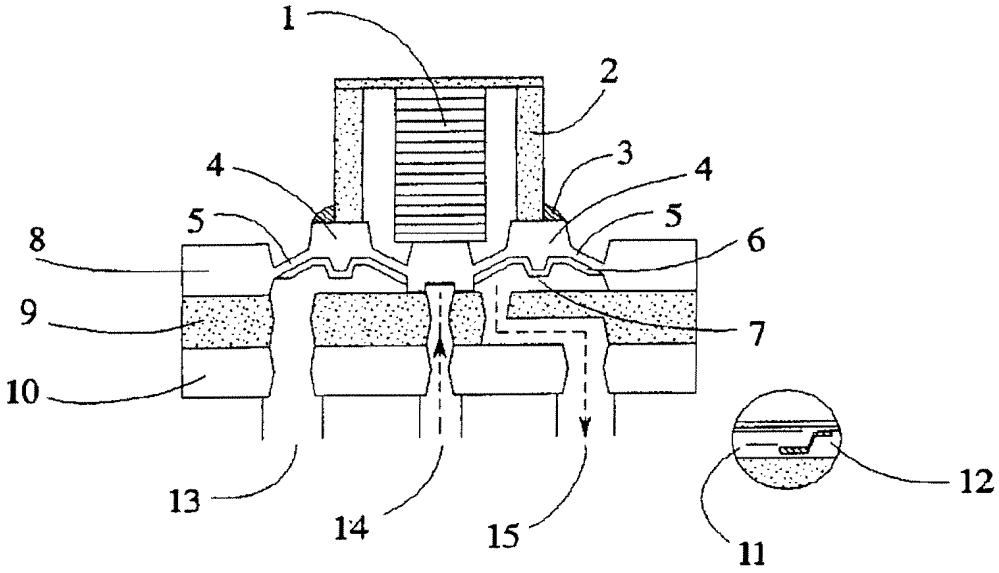
[Drawing 5]

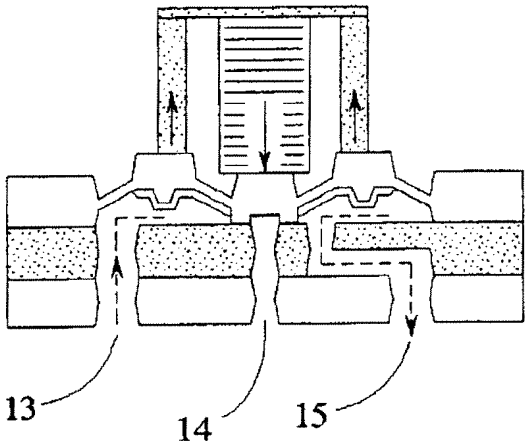
FIG. 5D



[Drawing 6]

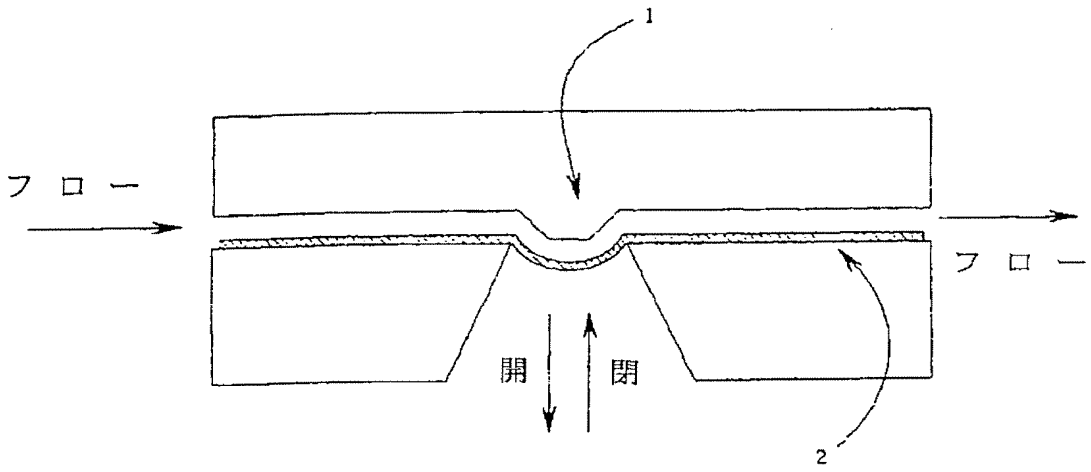
FIG. 6





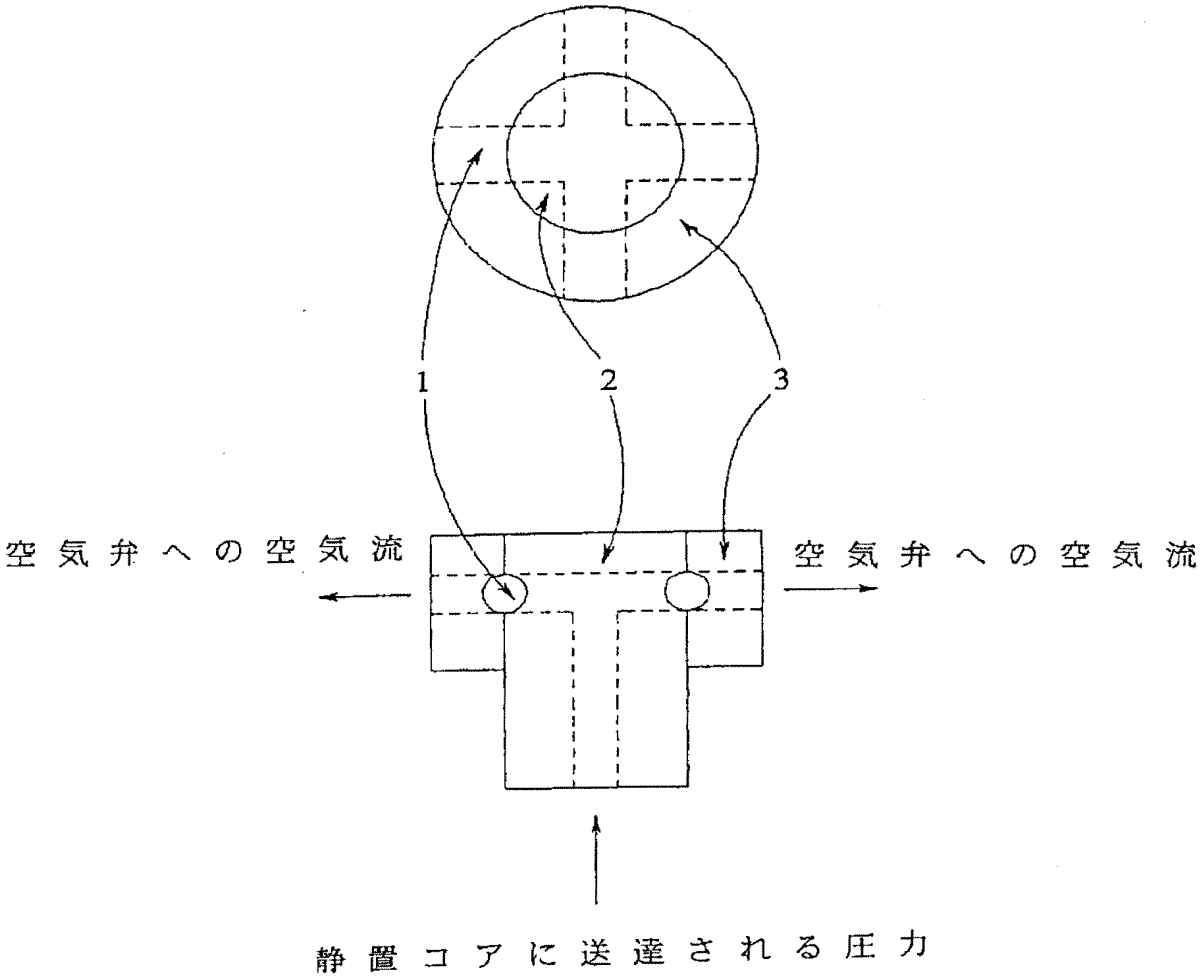
[Drawing 7]

FIG. 7



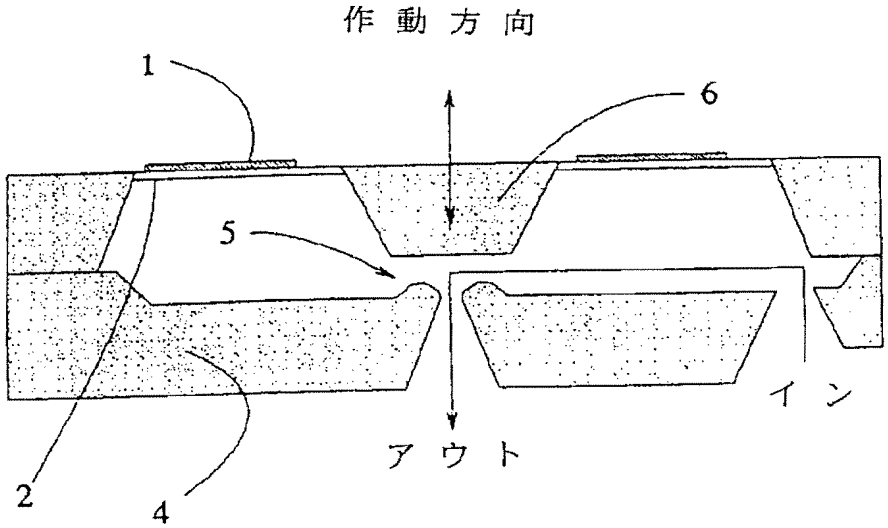
[Drawing 8]

FIG. 8



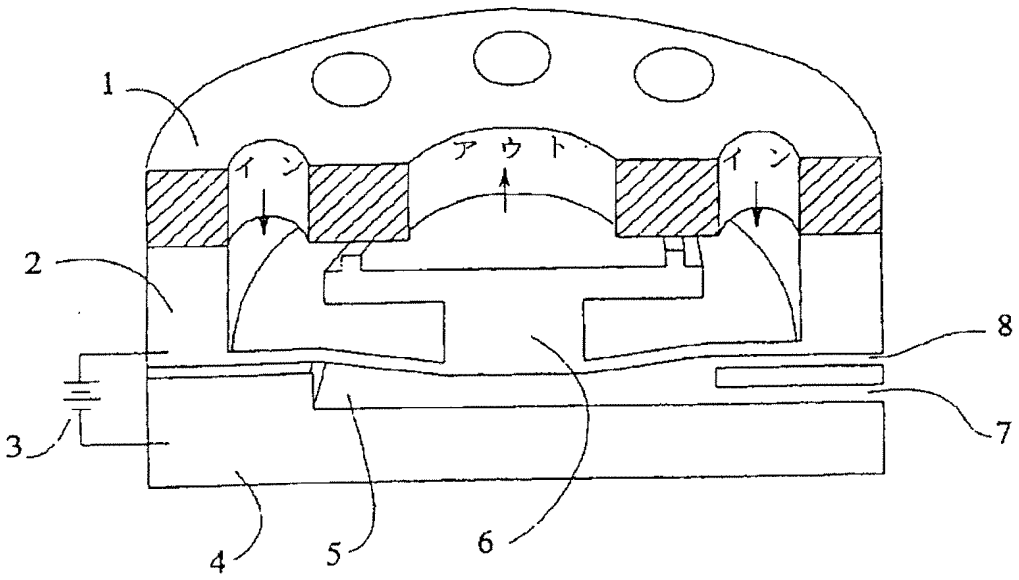
[Drawing 9]

FIG. 9



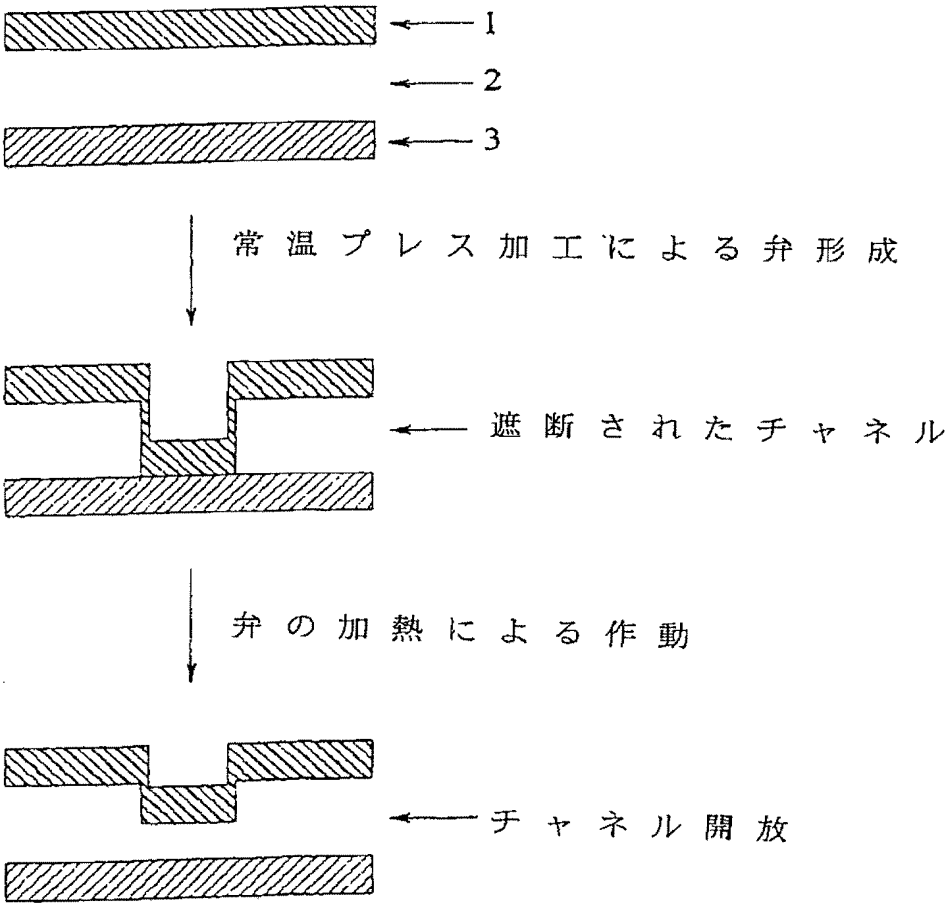
[Drawing 10]

FIG. 10



[Drawing 11]

FIG. 11



[Drawing 12]

FIG. 12A

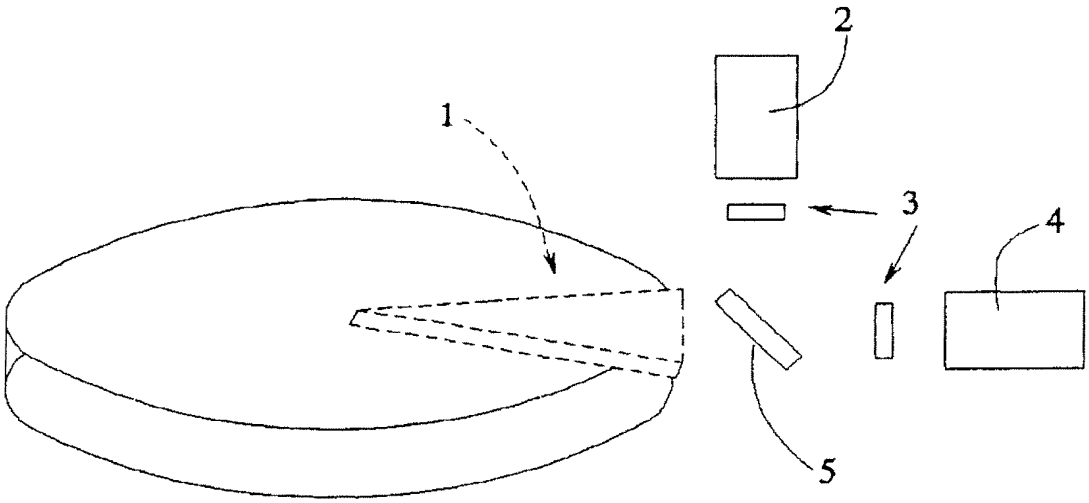
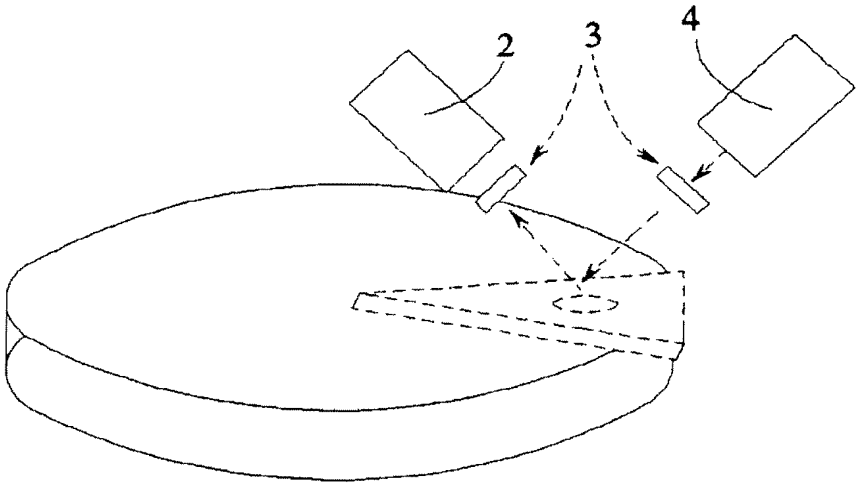


FIG. 12B



[Drawing 13]

FIG. 13A

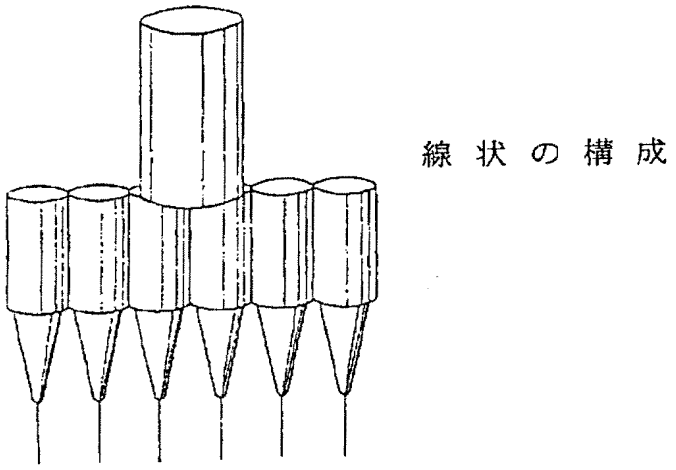
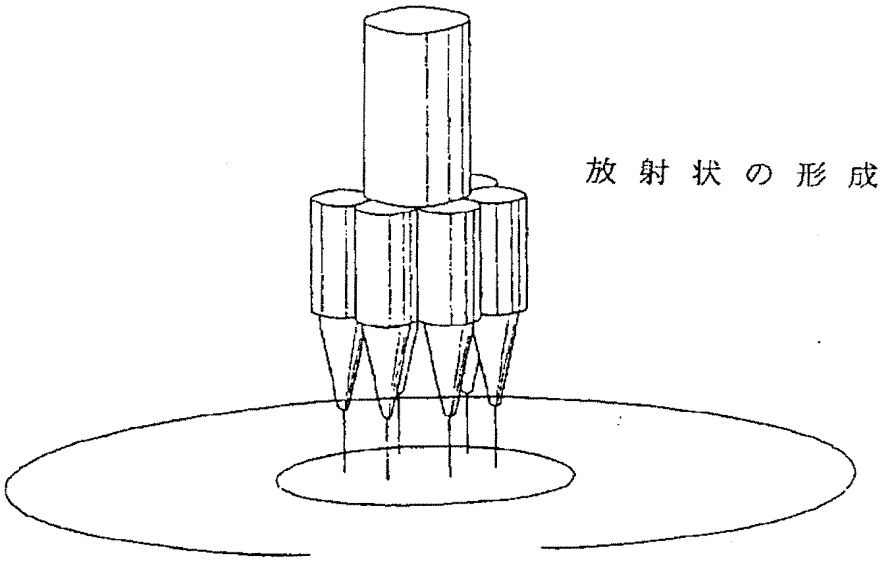


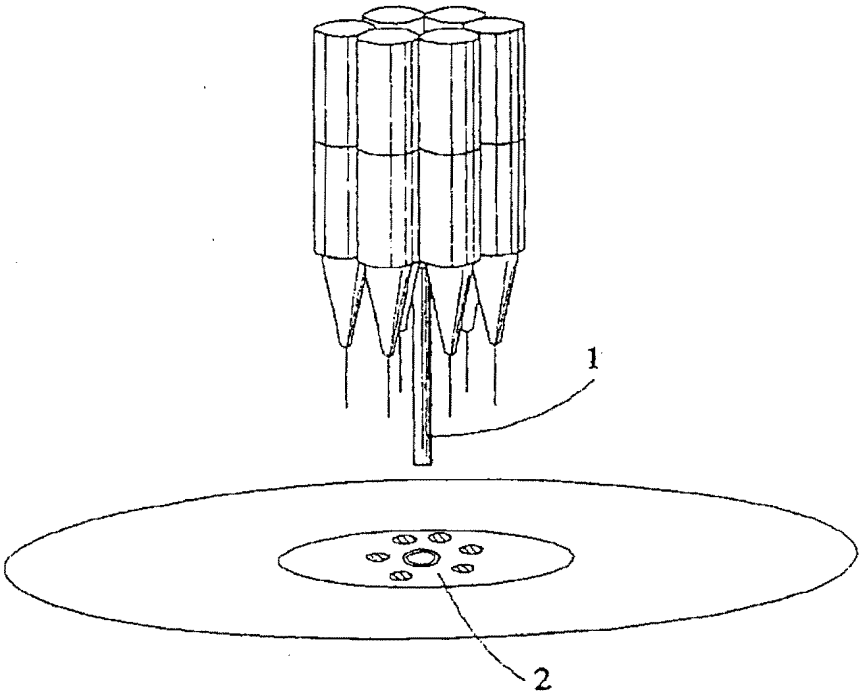
FIG. 13B



[Drawing 13]

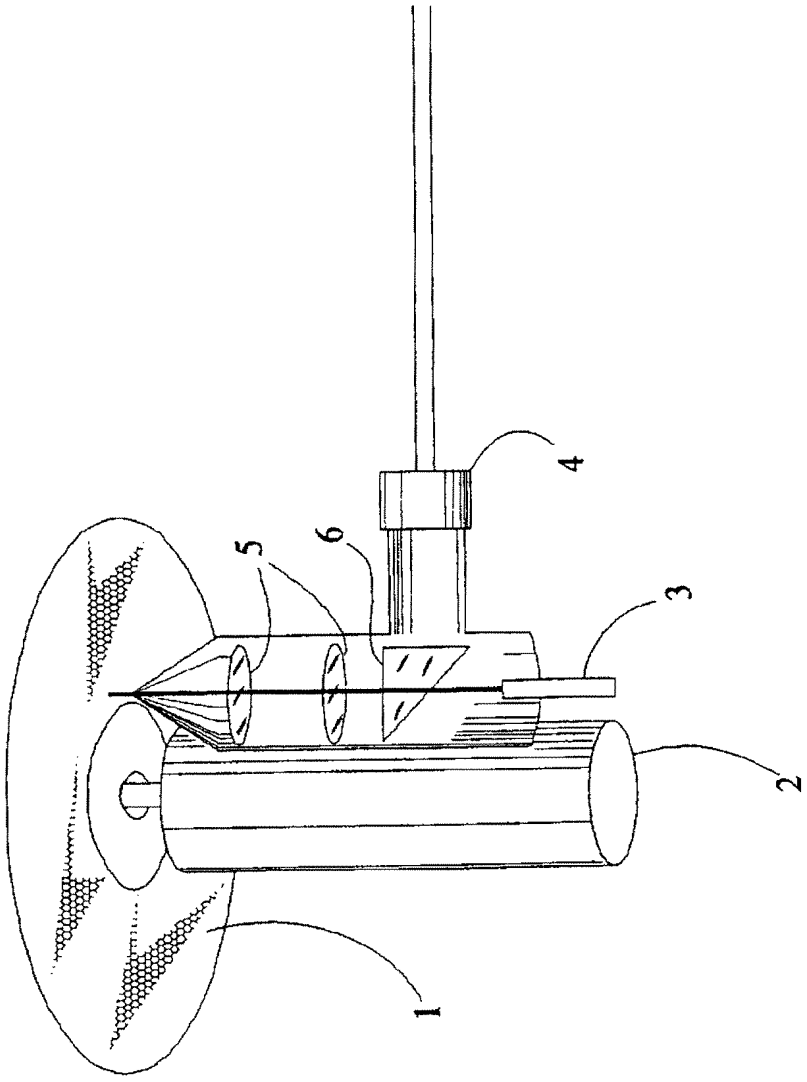
FIG. 13C

放射状の構成



[Drawing 14]

FIG. 14A



[Drawing 14]

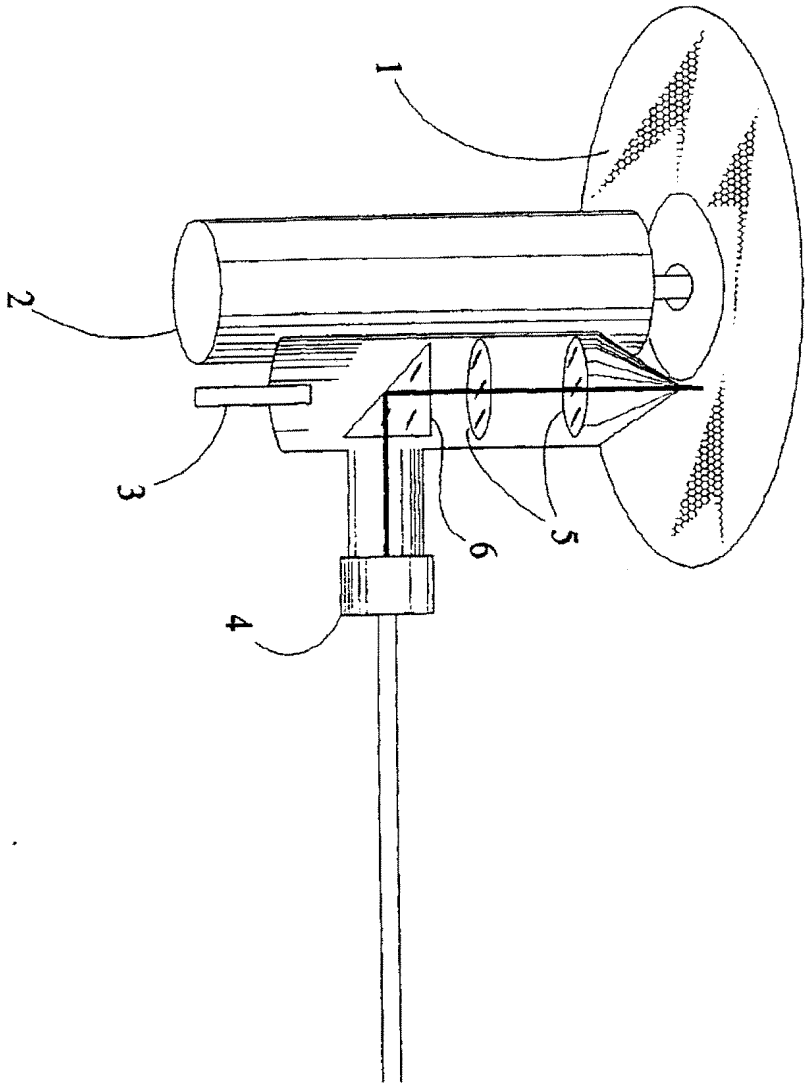


FIG. 14B

[Drawing 14]

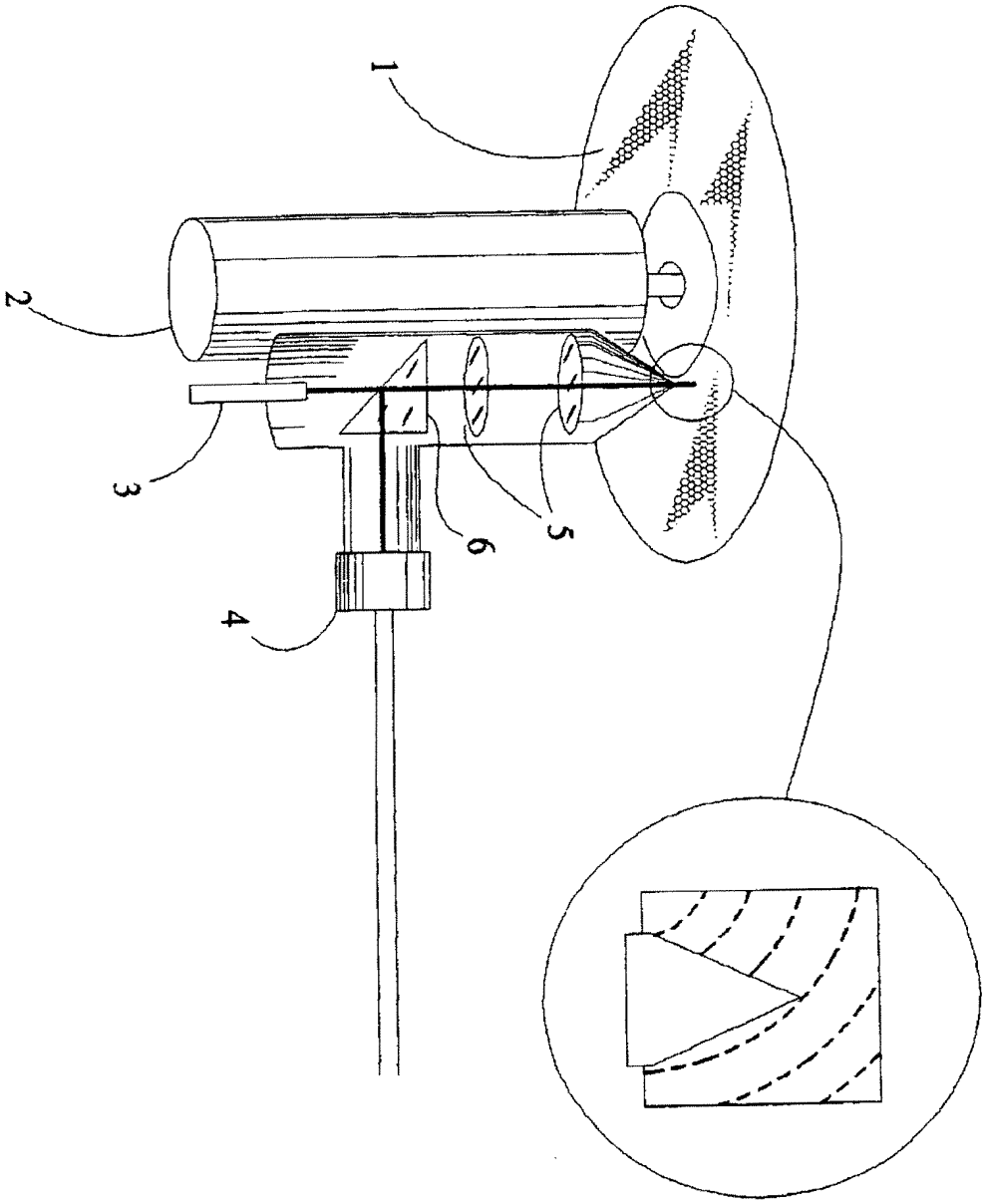


FIG. 14C

[Drawing 14]

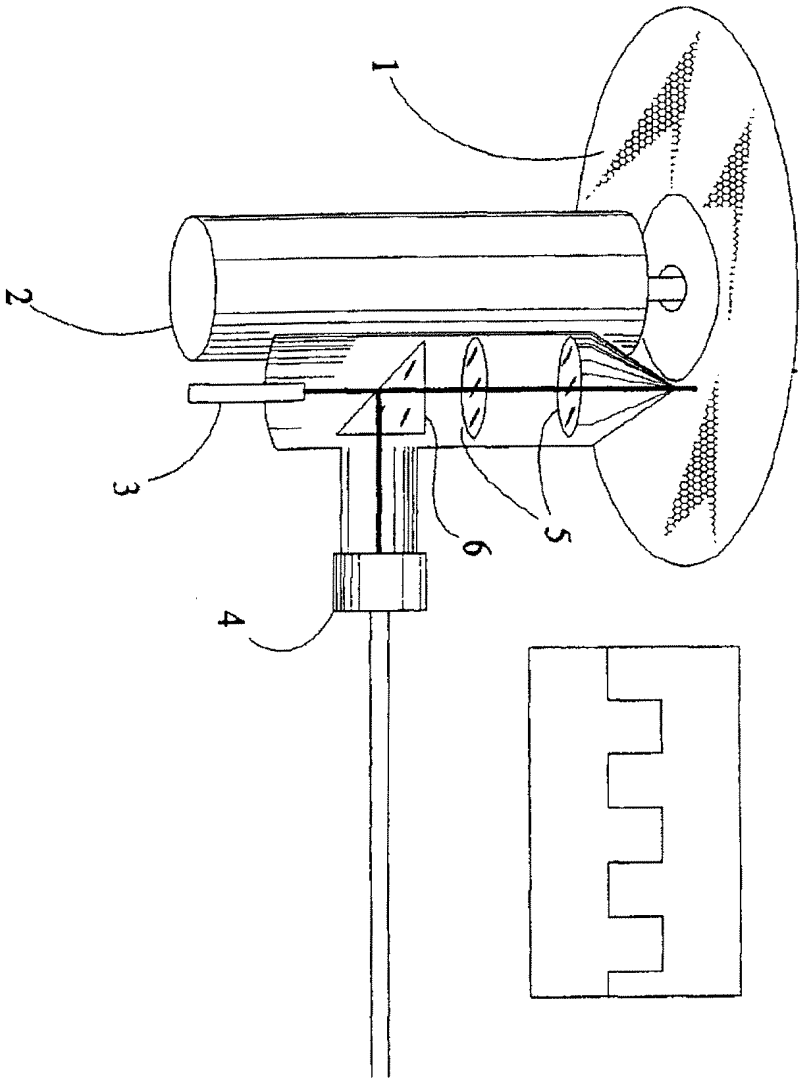


FIG. 14D

[Drawing 14]

レーザビームは、ディスクのピットとランド上に焦点を当て、フォトダイオード上に反射される。

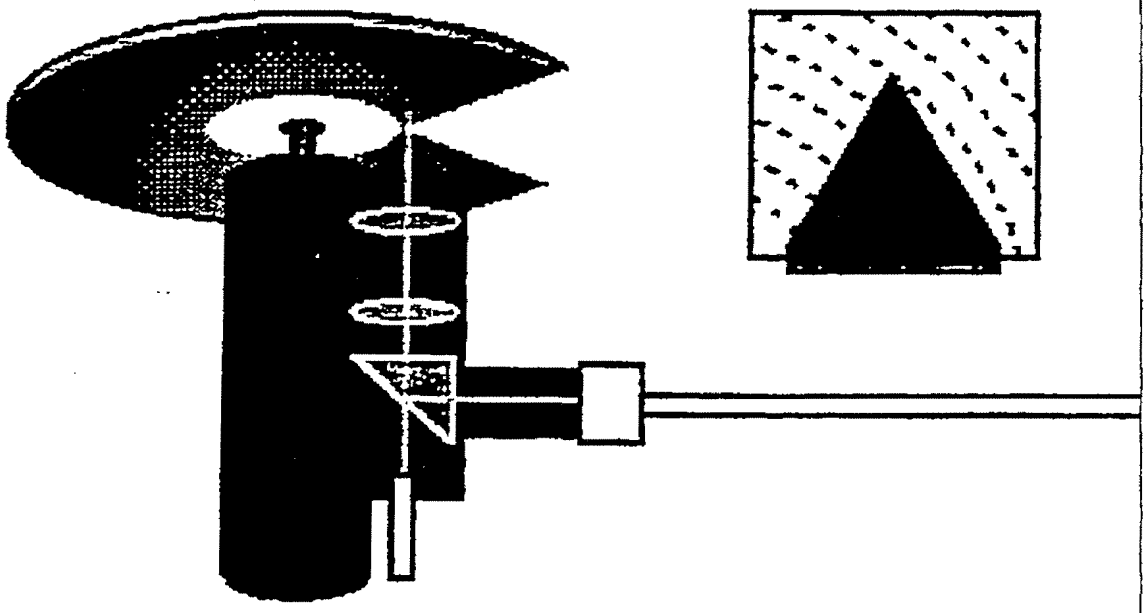


Figure 14E

[Drawing 14]

フォトダイオードは、パルスを電気信号に変換する。

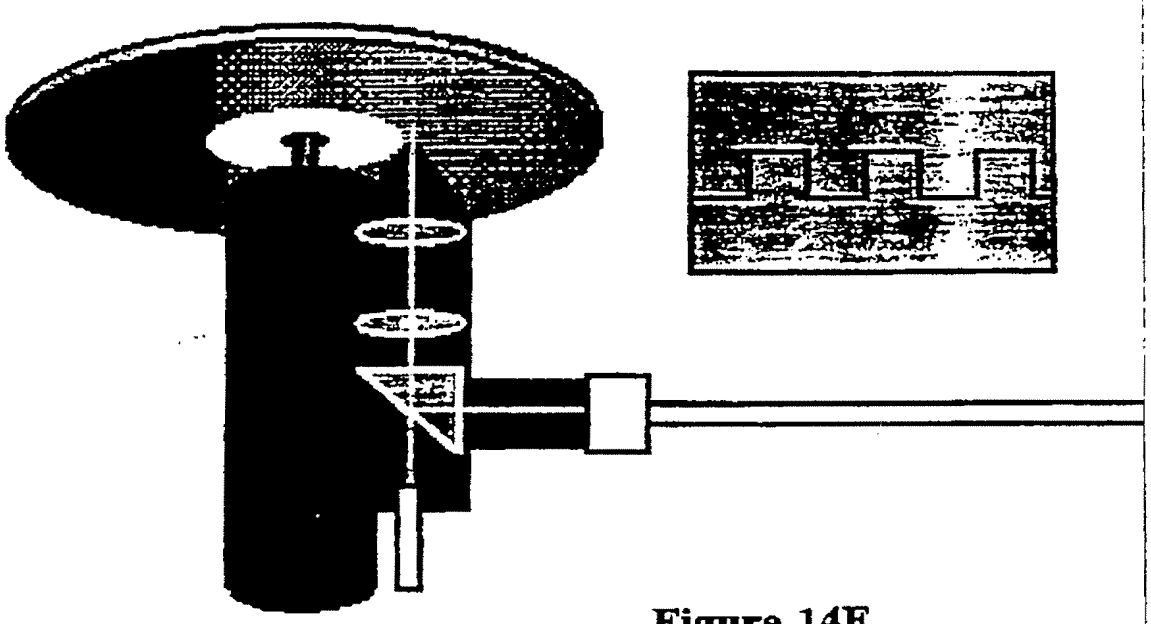
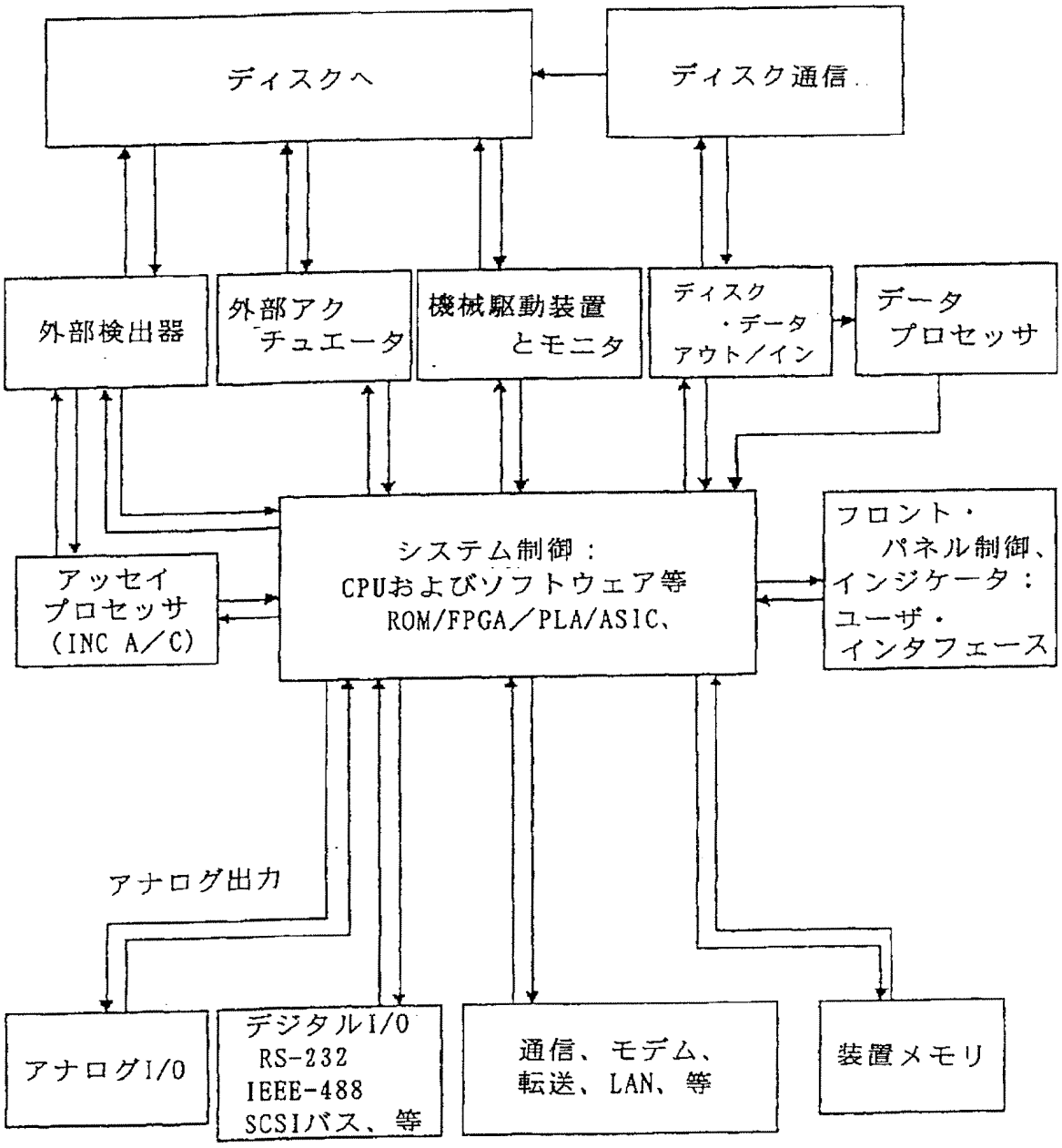


Figure 14F

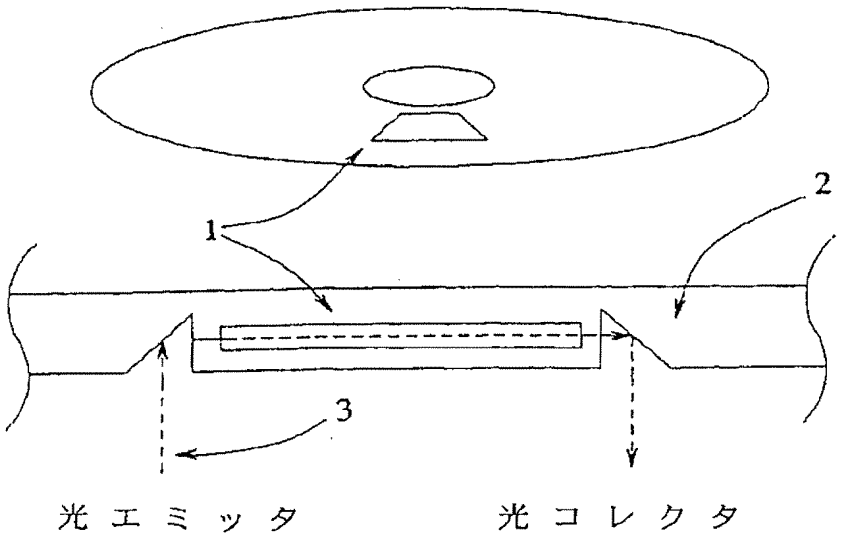
[Drawing 15]

FIG. 15



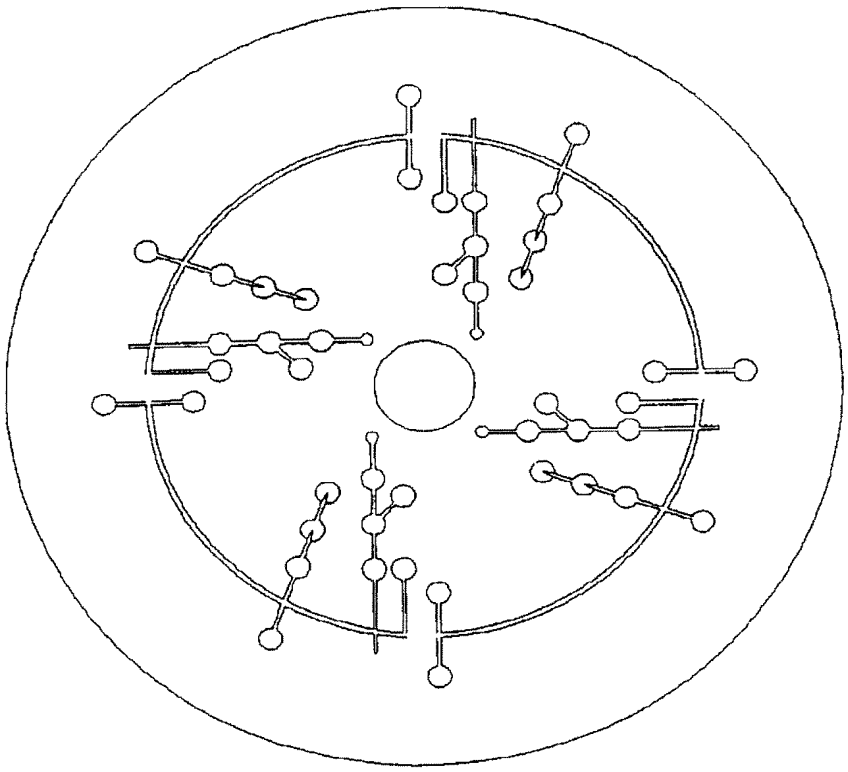
[Drawing 16]

FIG. 16



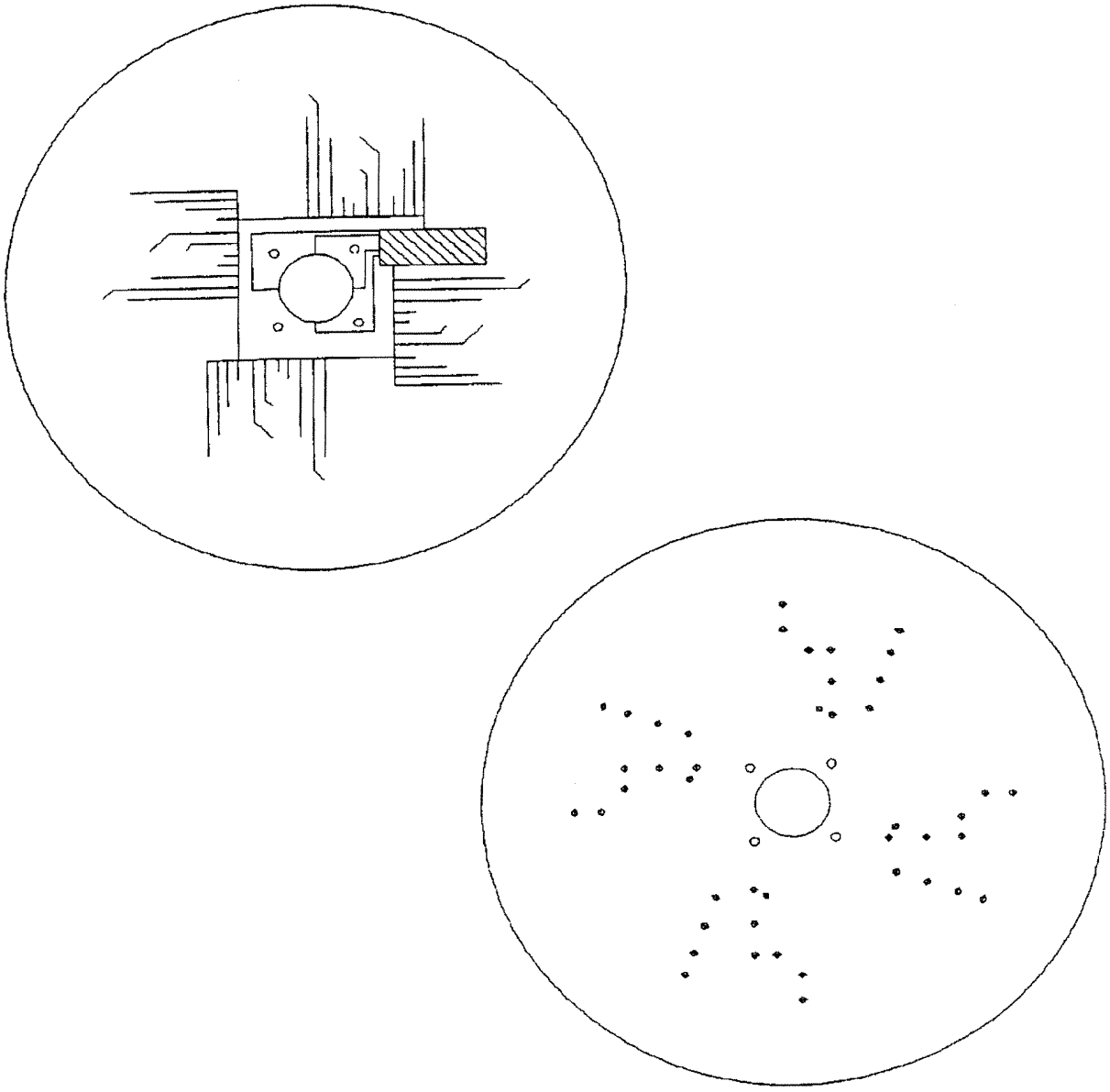
[Drawing 17]

FIG. 17A



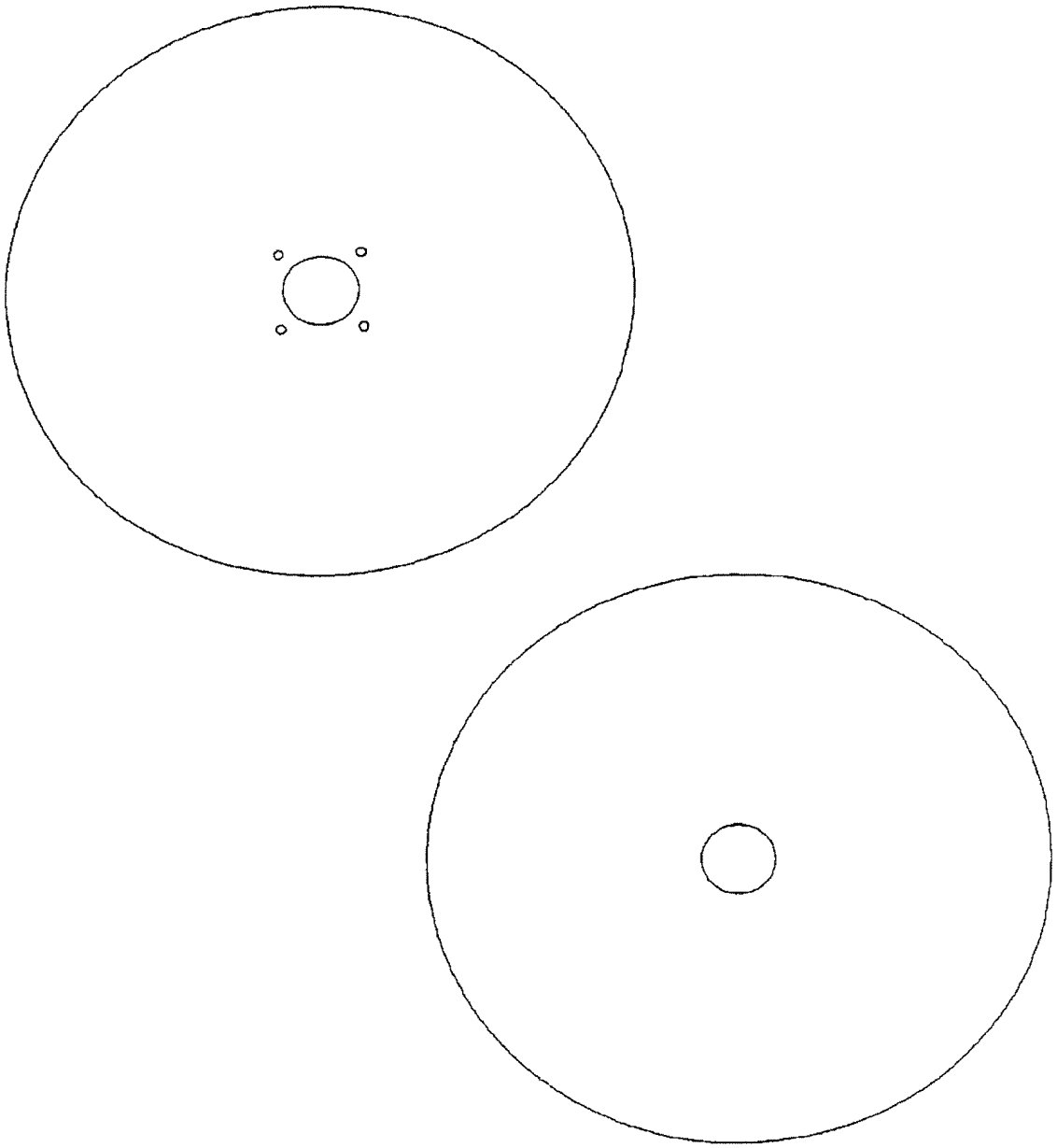
[Drawing 17]

FIG. 17B



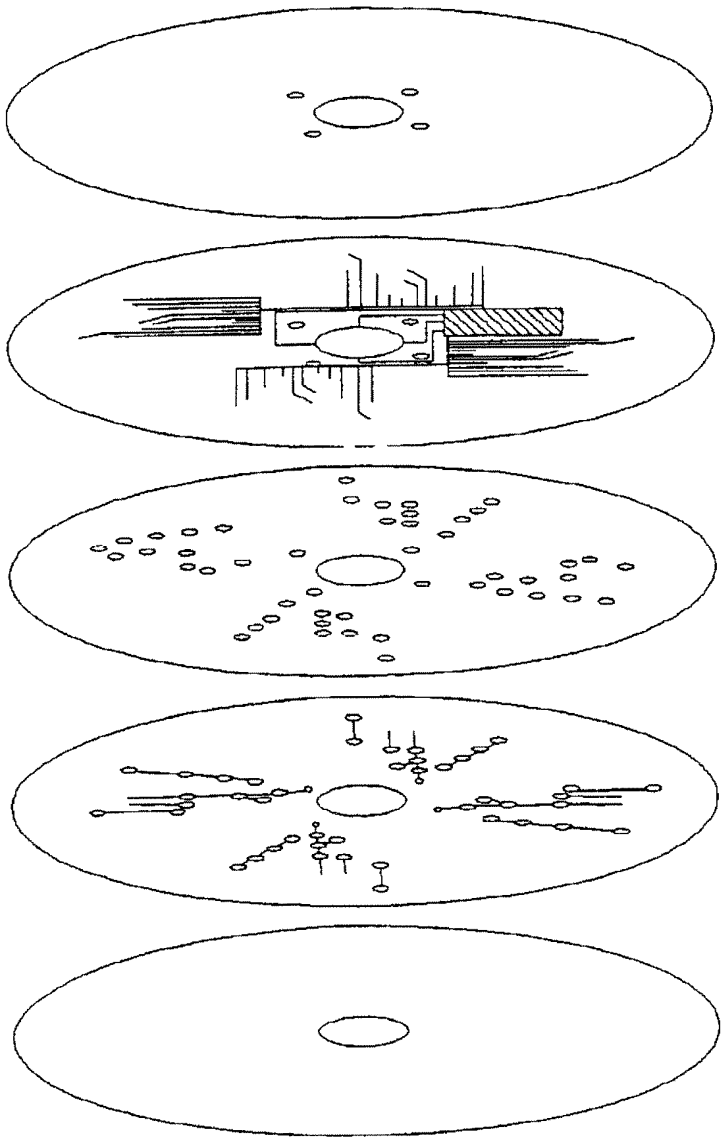
[Drawing 17]

FIG. 17C



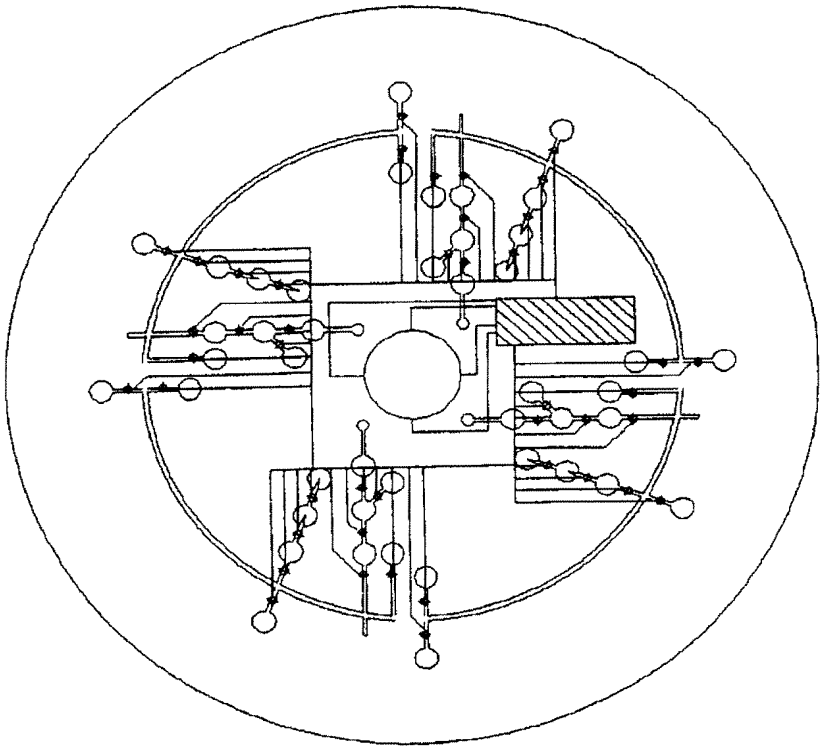
[Drawing 17]

FIG. 17D



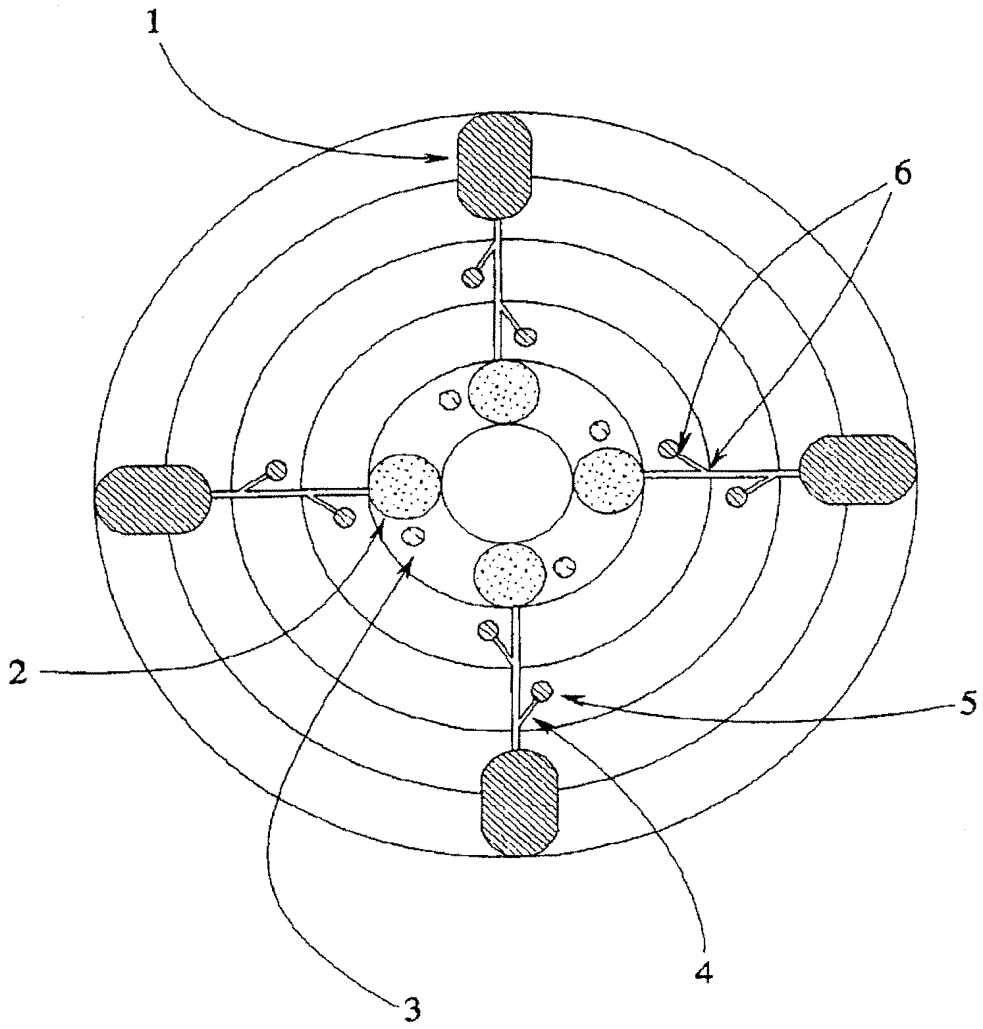
[Drawing 17]

FIG. 17E



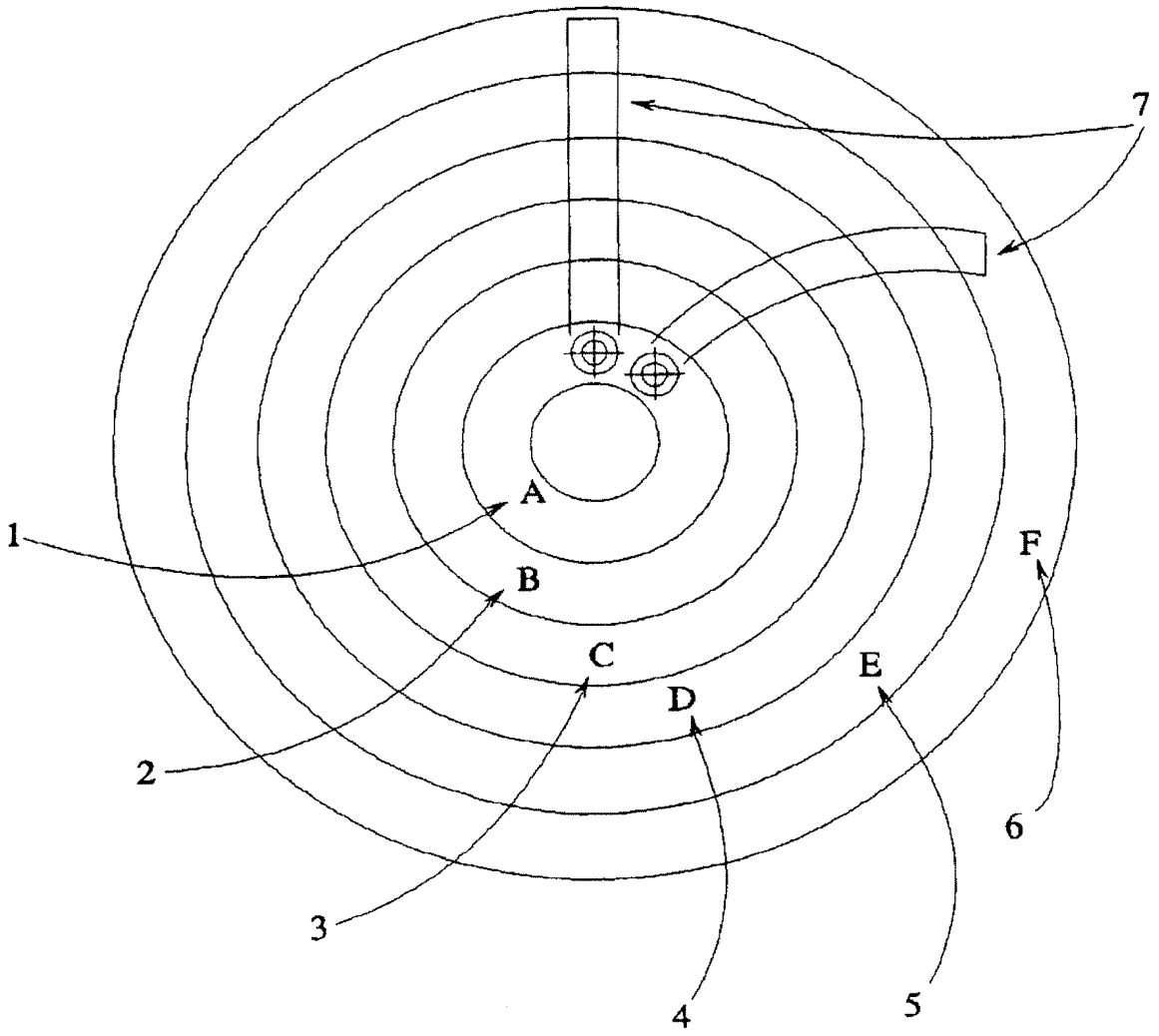
[Drawing 17]

FIG. 17F



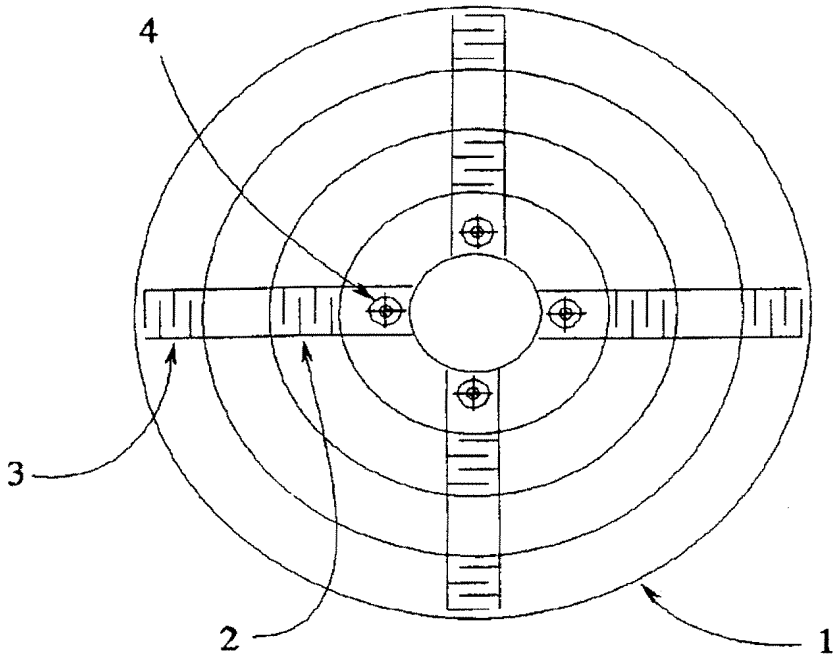
[Drawing 17]

FIG. 17G



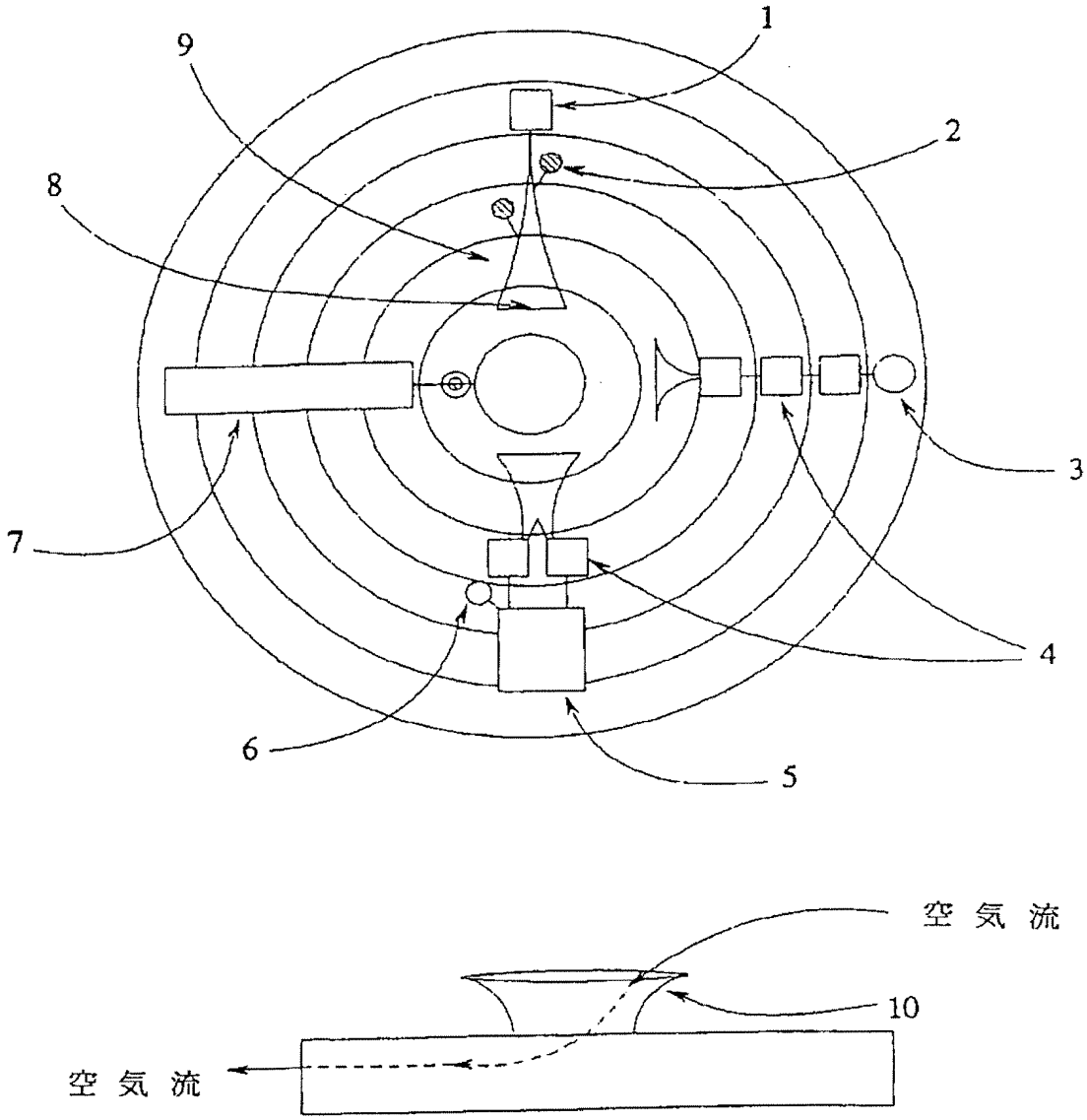
[Drawing 17]

FIG. 17H



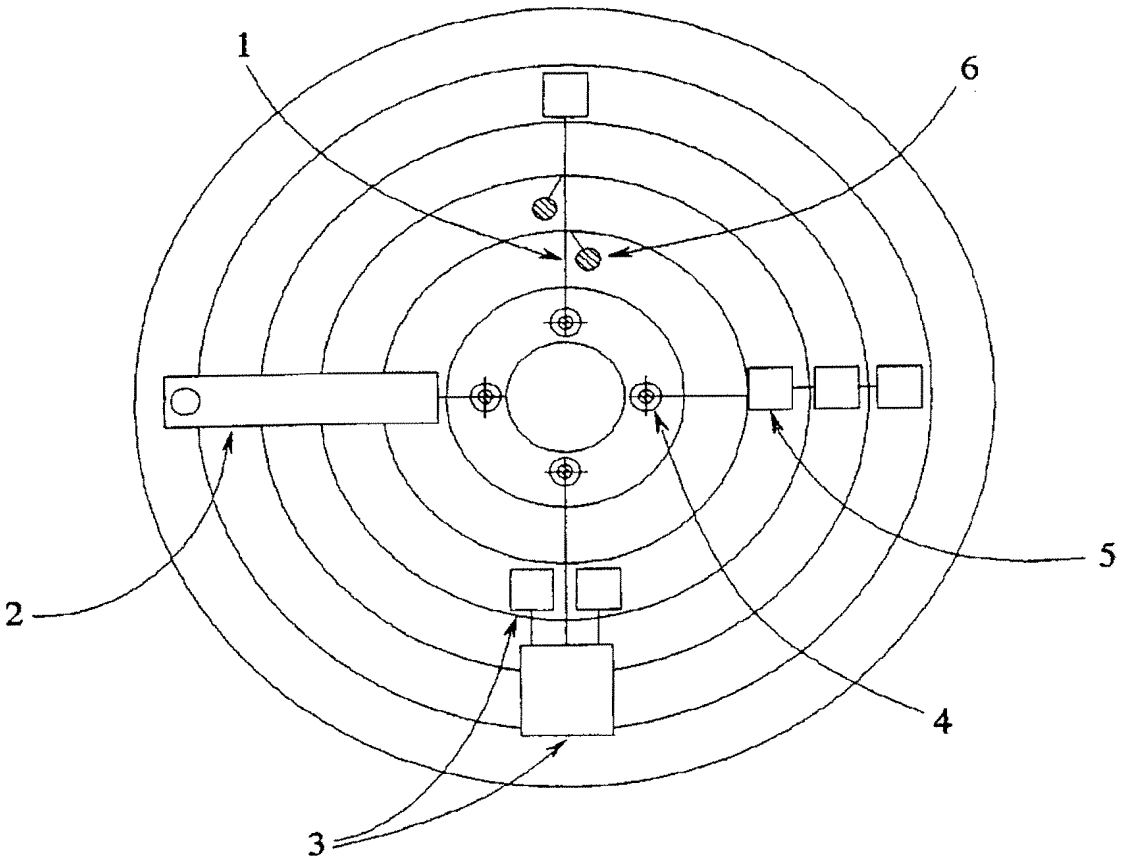
[Drawing 17]

FIG. 17I



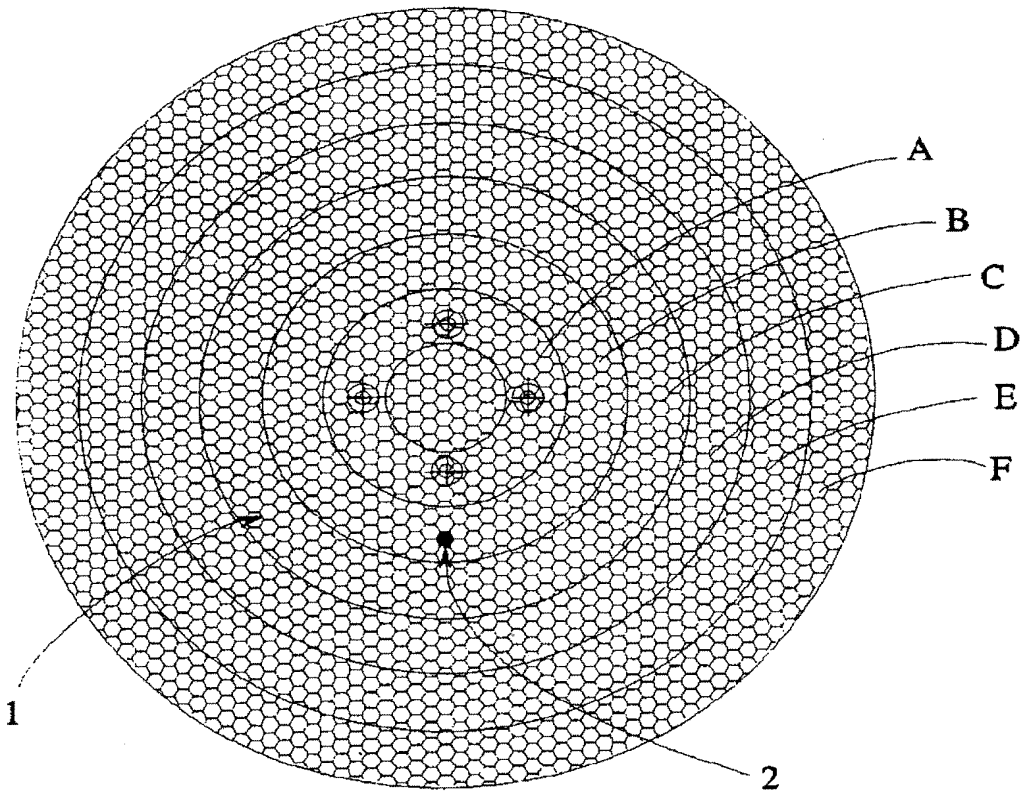
[Drawing 17]

FIG. 17J



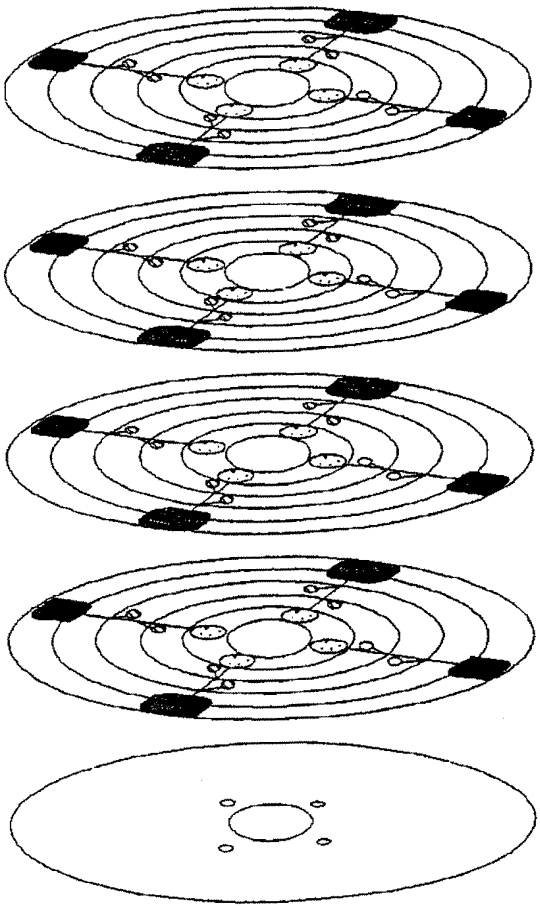
[Drawing 17]

FIG. 17K



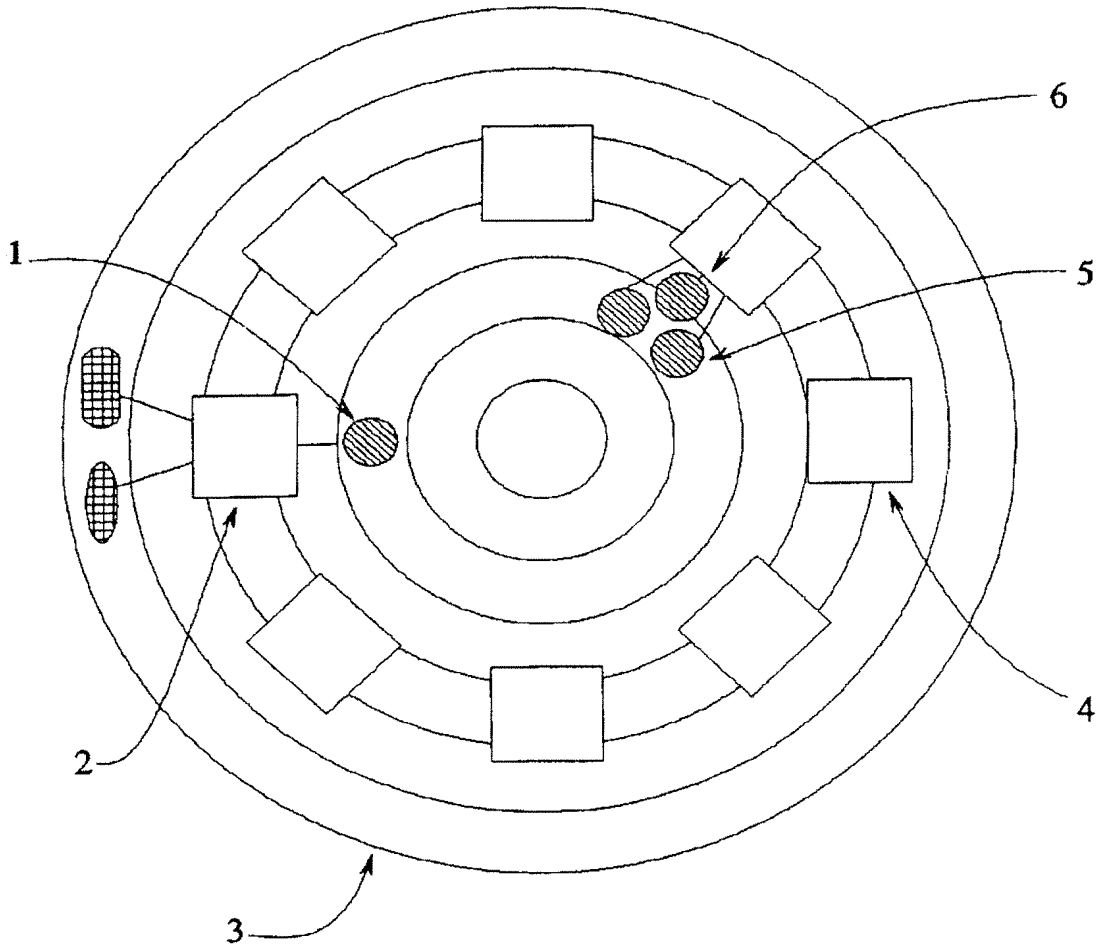
[Drawing 17]

FIG. 17L



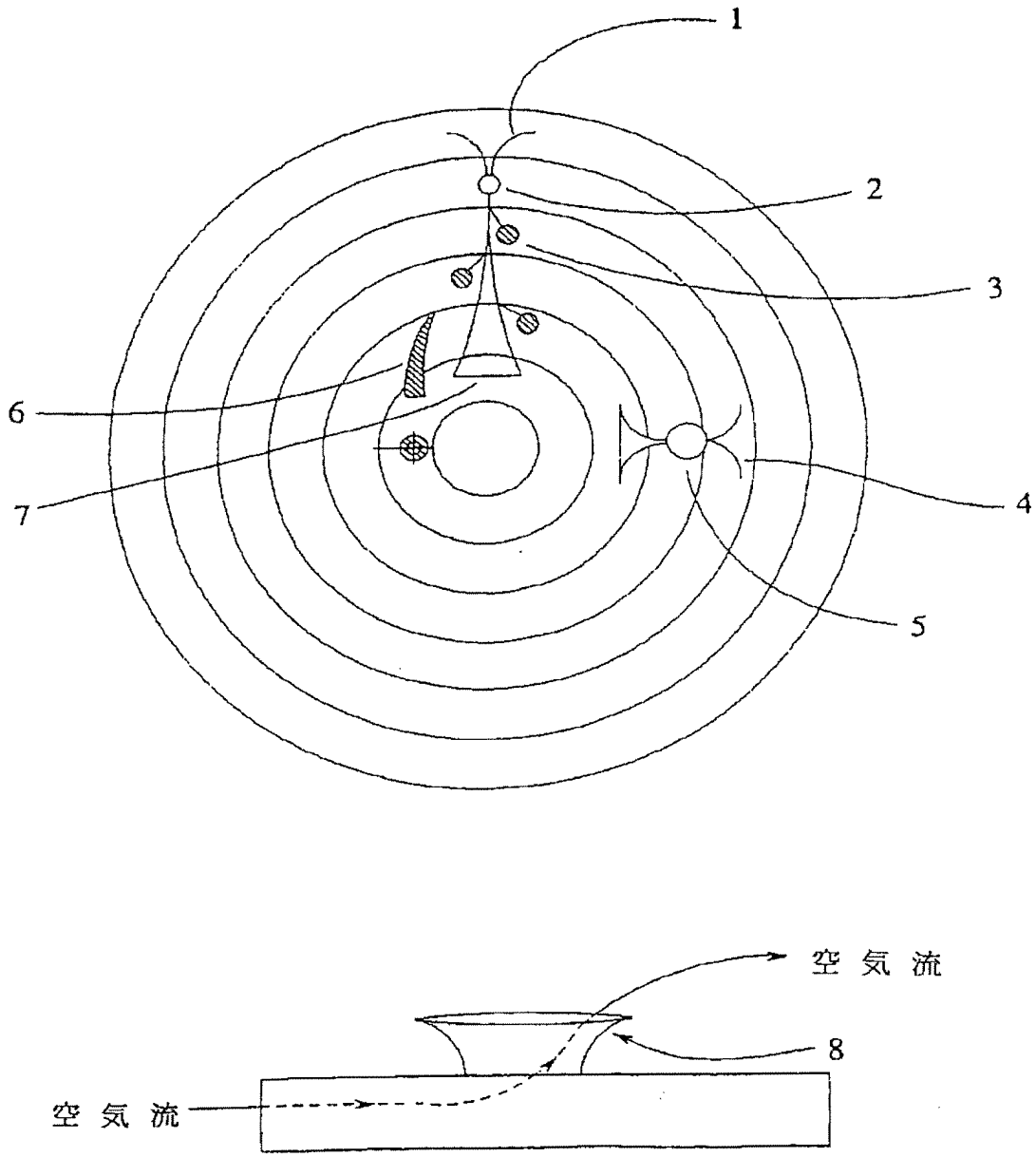
[Drawing 17]

FIG. 17M



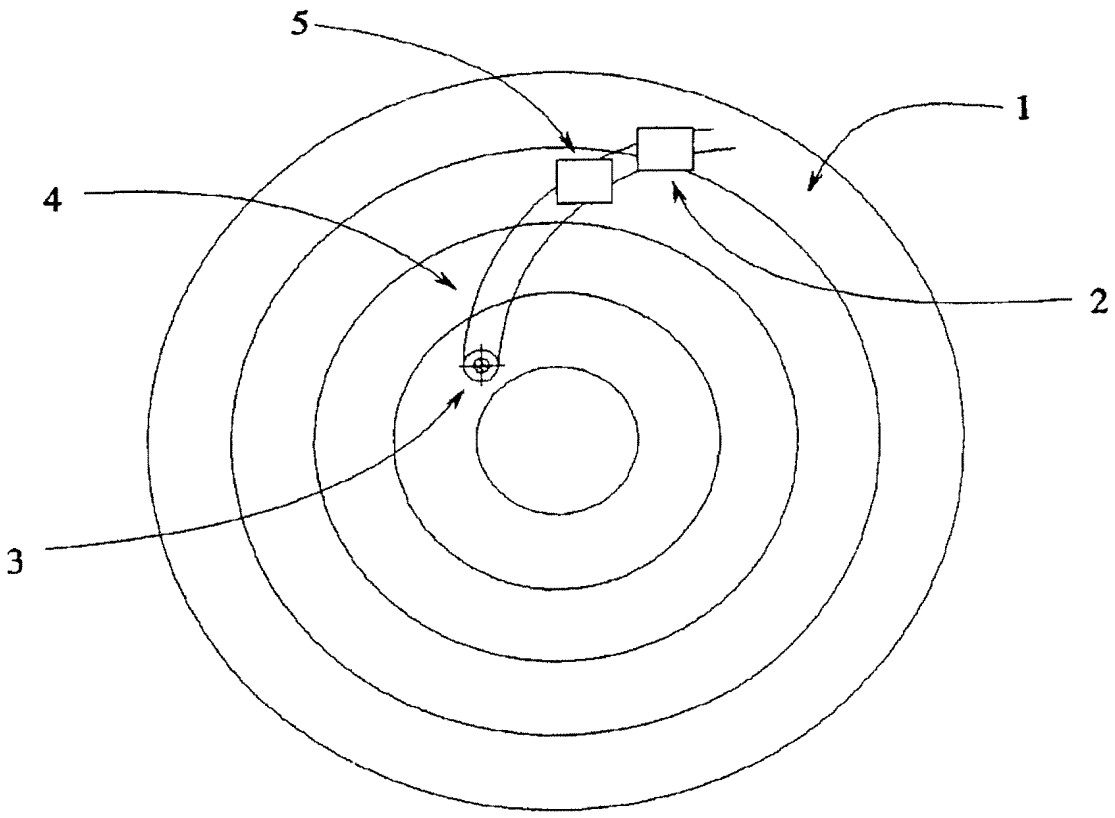
[Drawing 17]

FIG. 17N



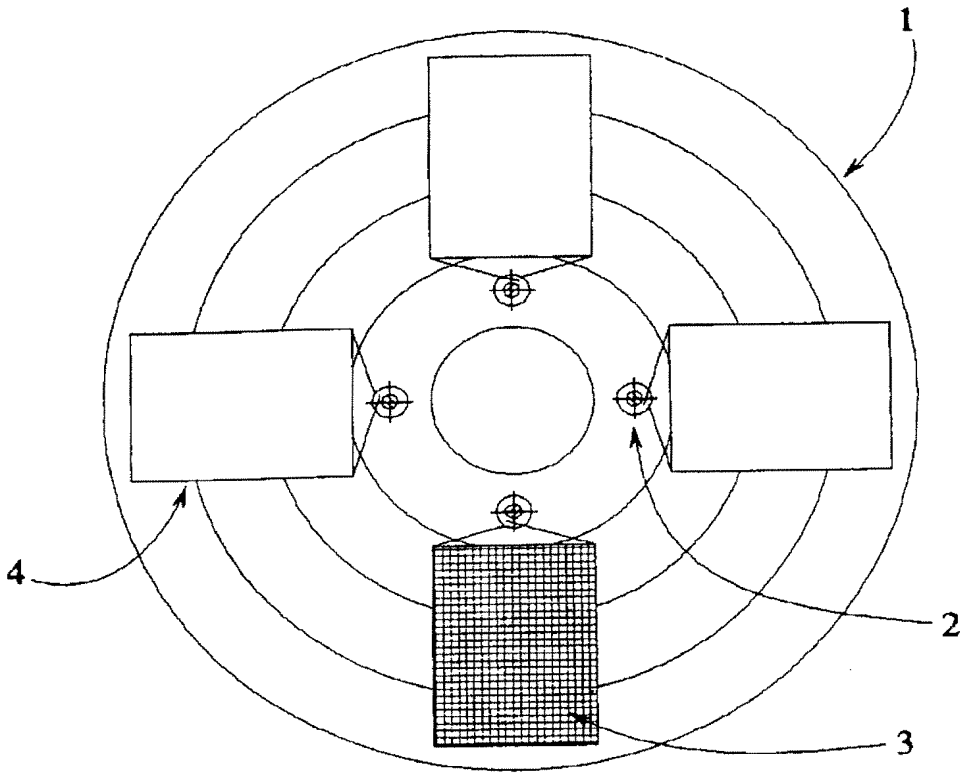
[Drawing 17]

FIG. 17O



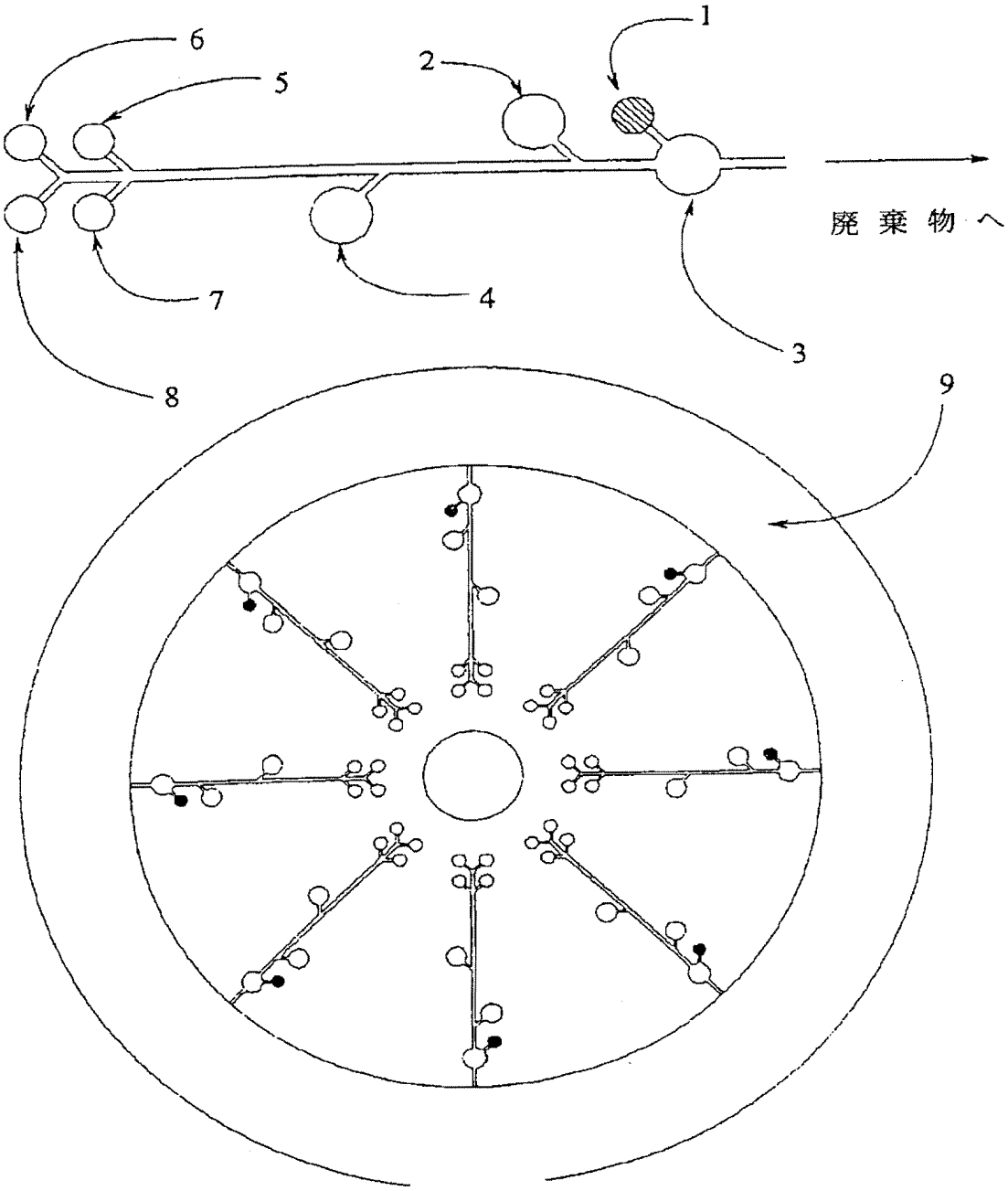
[Drawing 17]

FIG. 17P



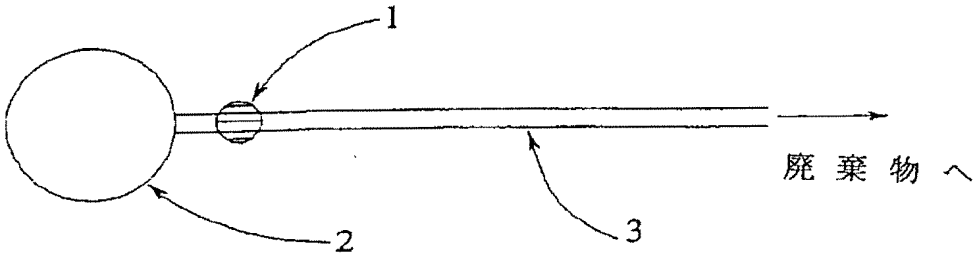
[Drawing 17]

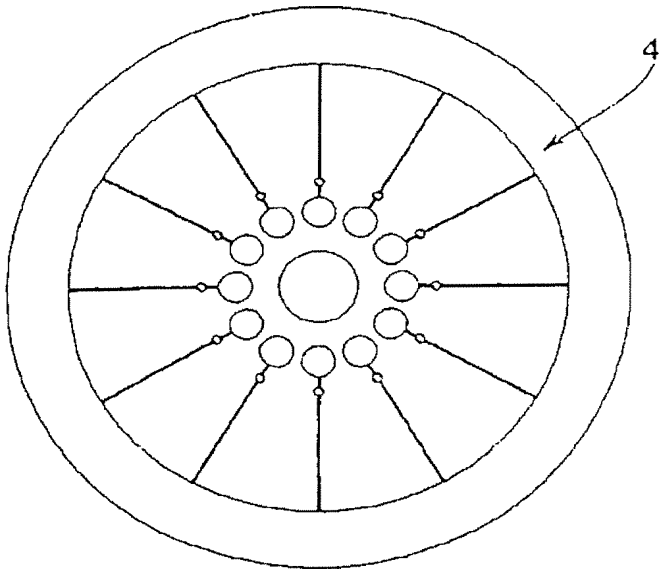
FIG. 17Q



[Drawing 17]

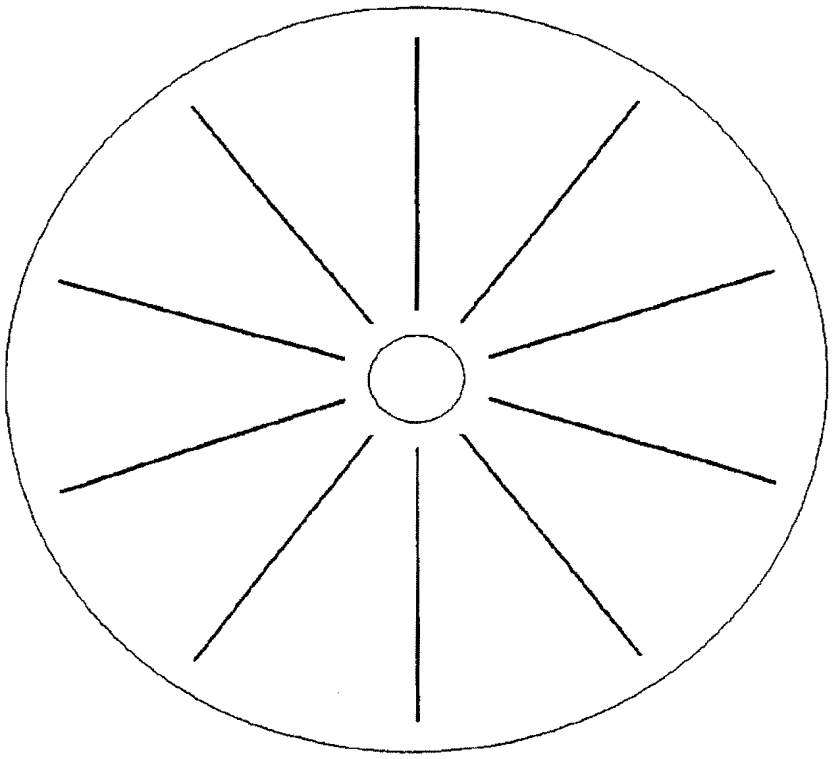
FIG. 17R





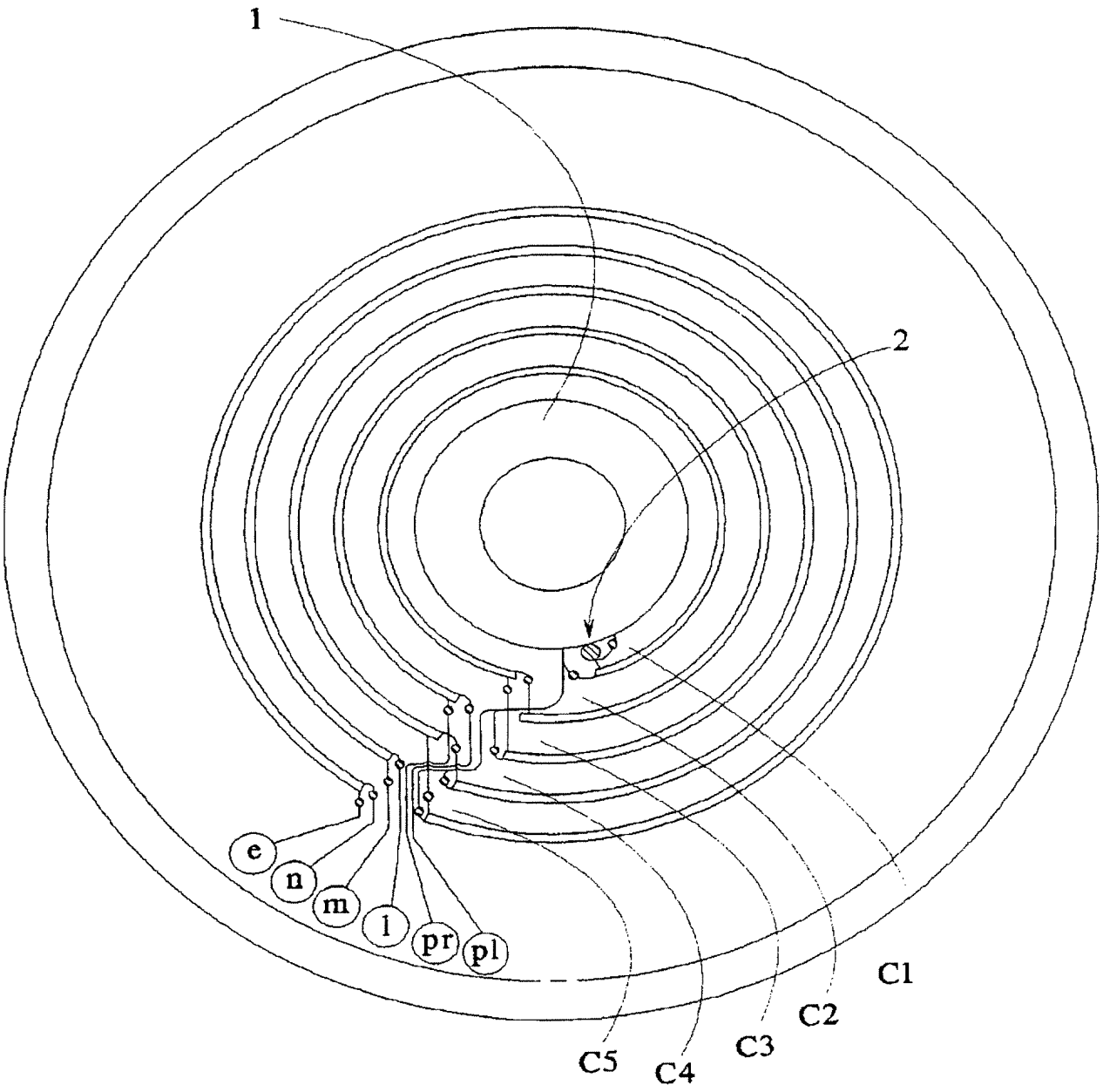
[Drawing 18]

FIG. 18



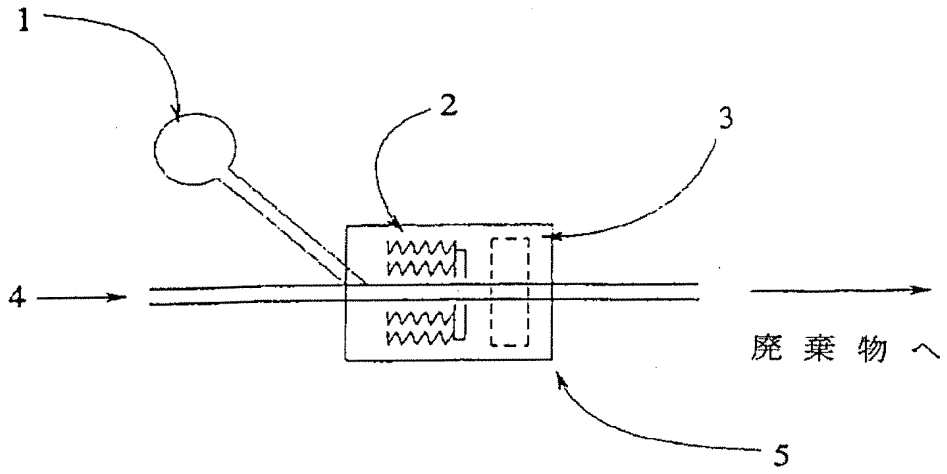
[Drawing 19]

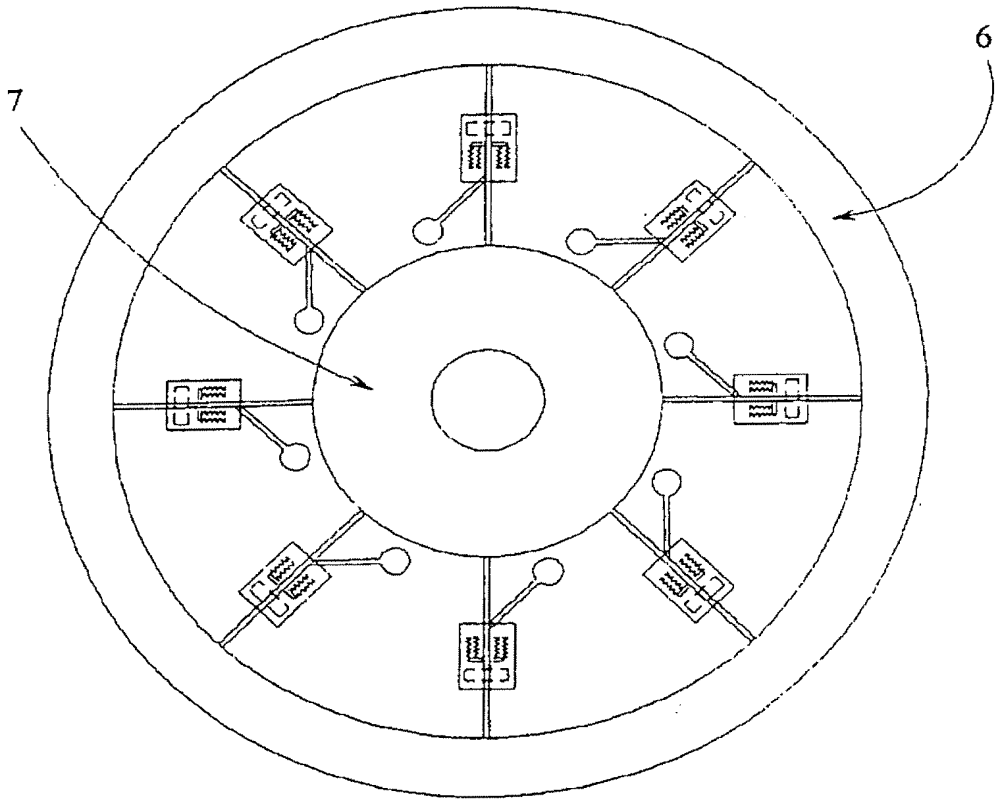
FIG. 19



[Drawing 20]

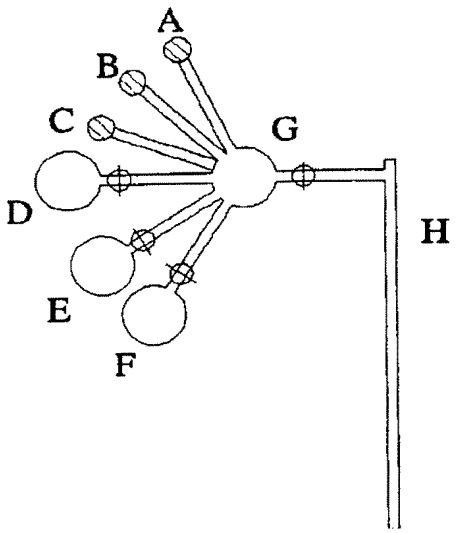
FIG. 20





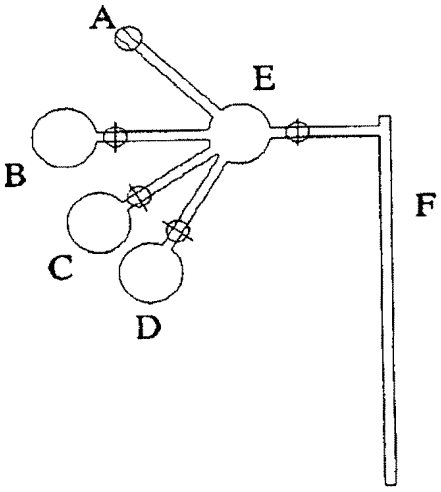
[Drawing 21]

FIG. 21



[Drawing 22]

FIG. 22



[Drawing 23]

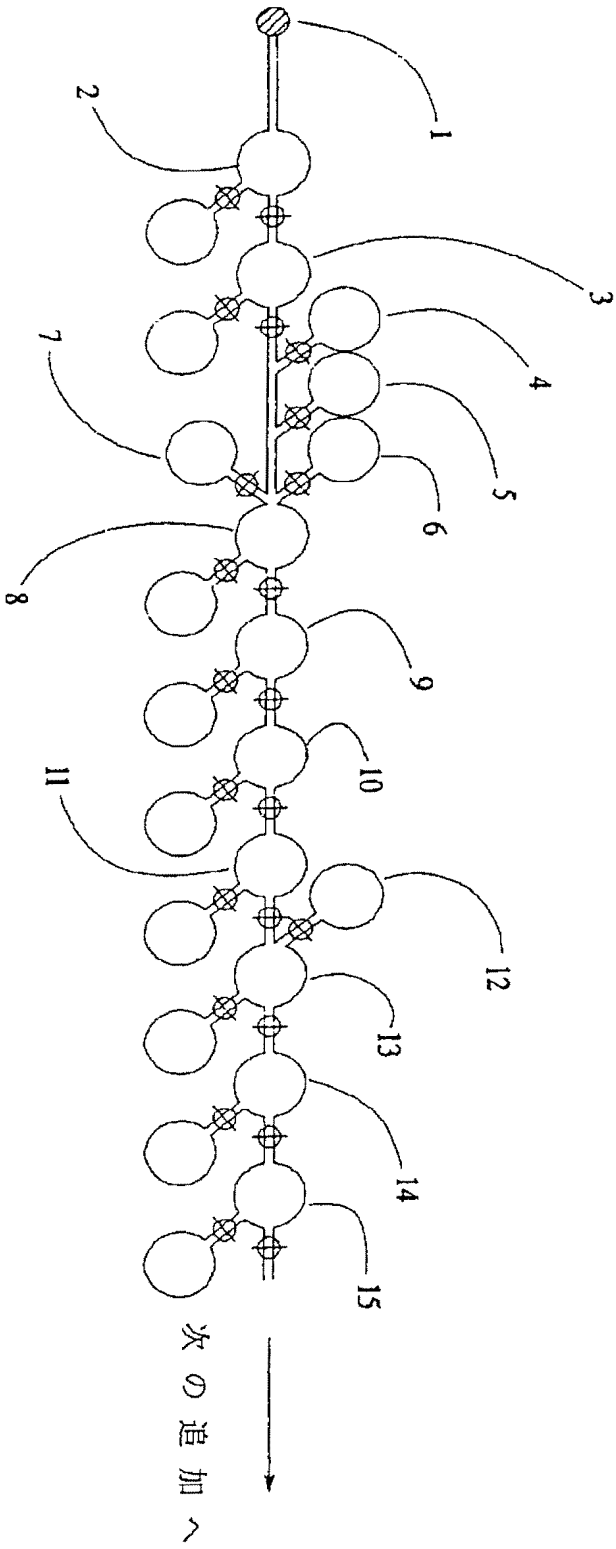
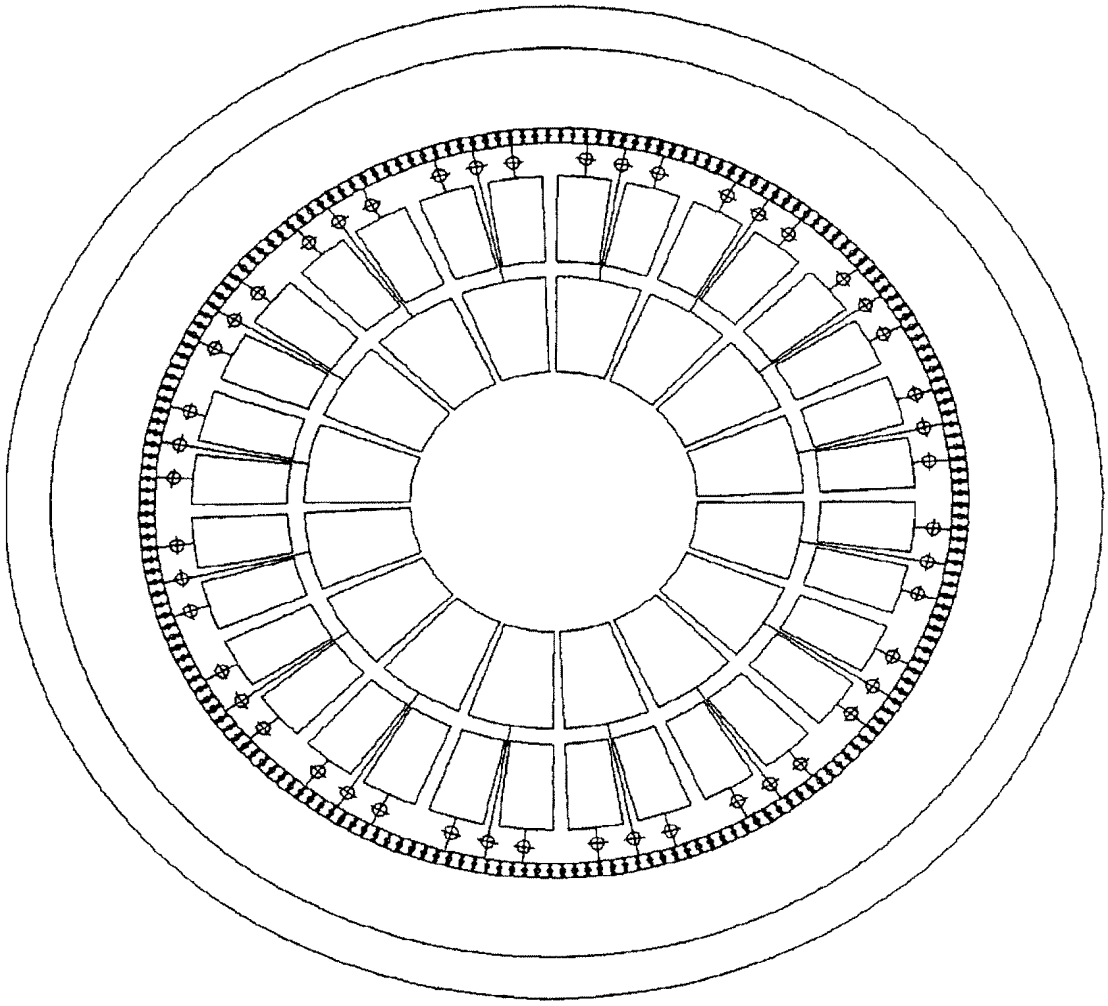


FIG. 23A

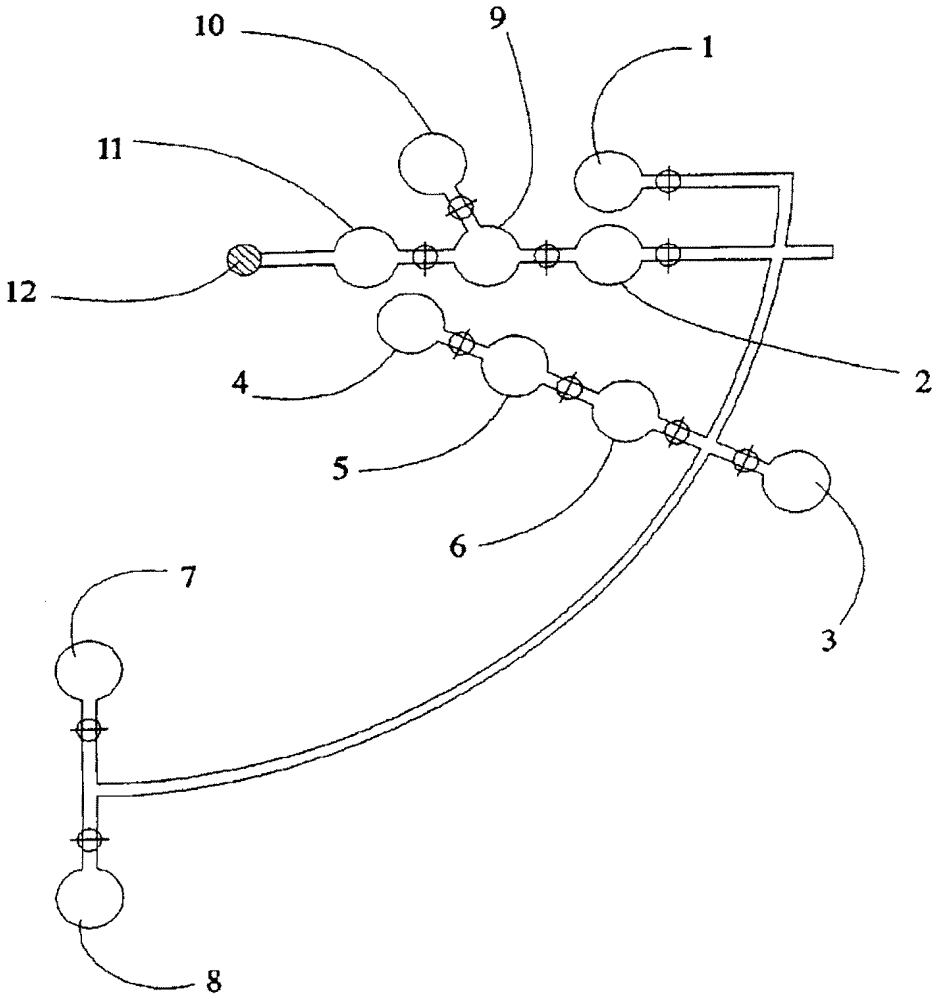
[Drawing 23]

FIG. 23B



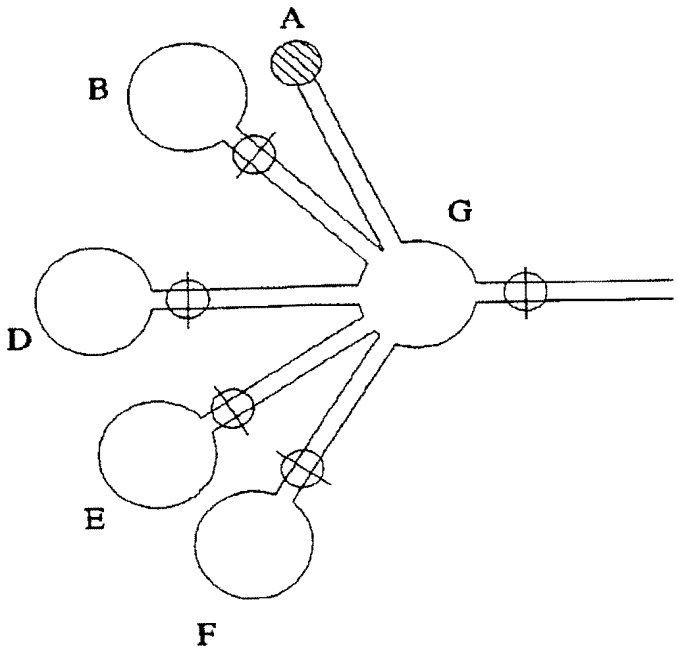
[Drawing 24]

FIG. 24



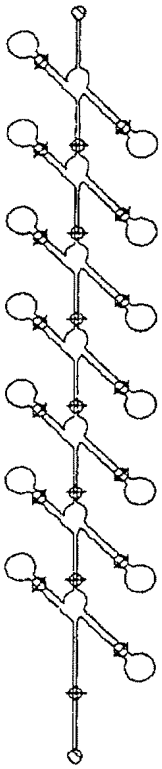
[Drawing 25]

FIG. 25



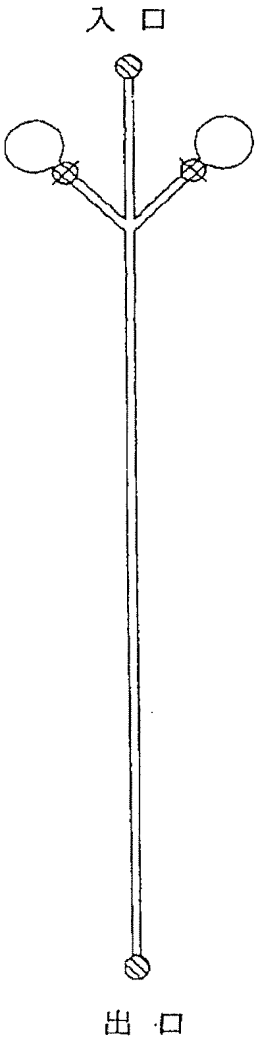
[Drawing 26]

FIG. 26



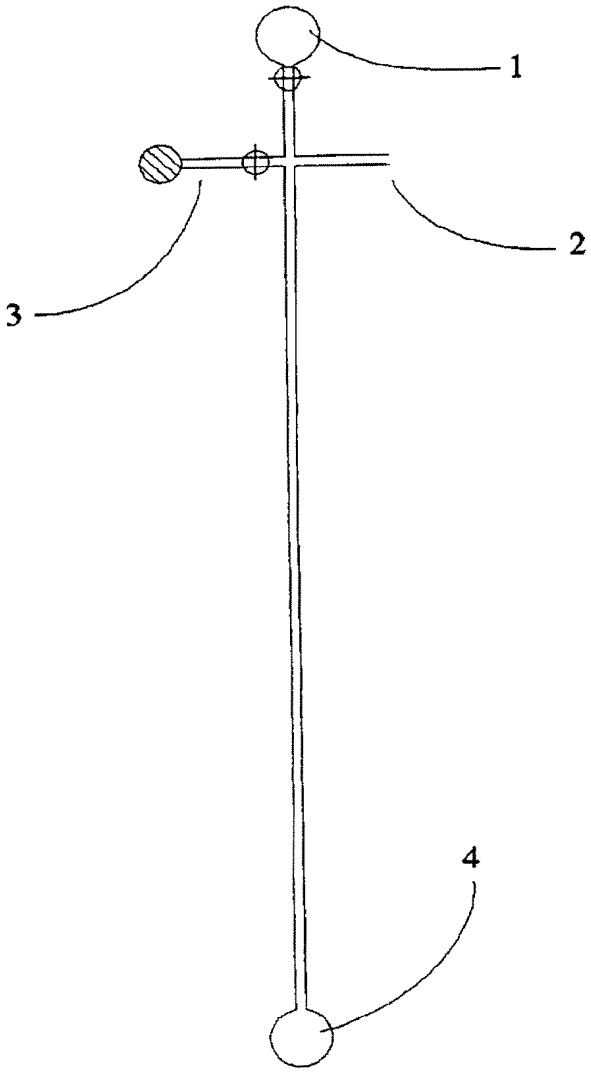
[Drawing 27]

FIG. 27



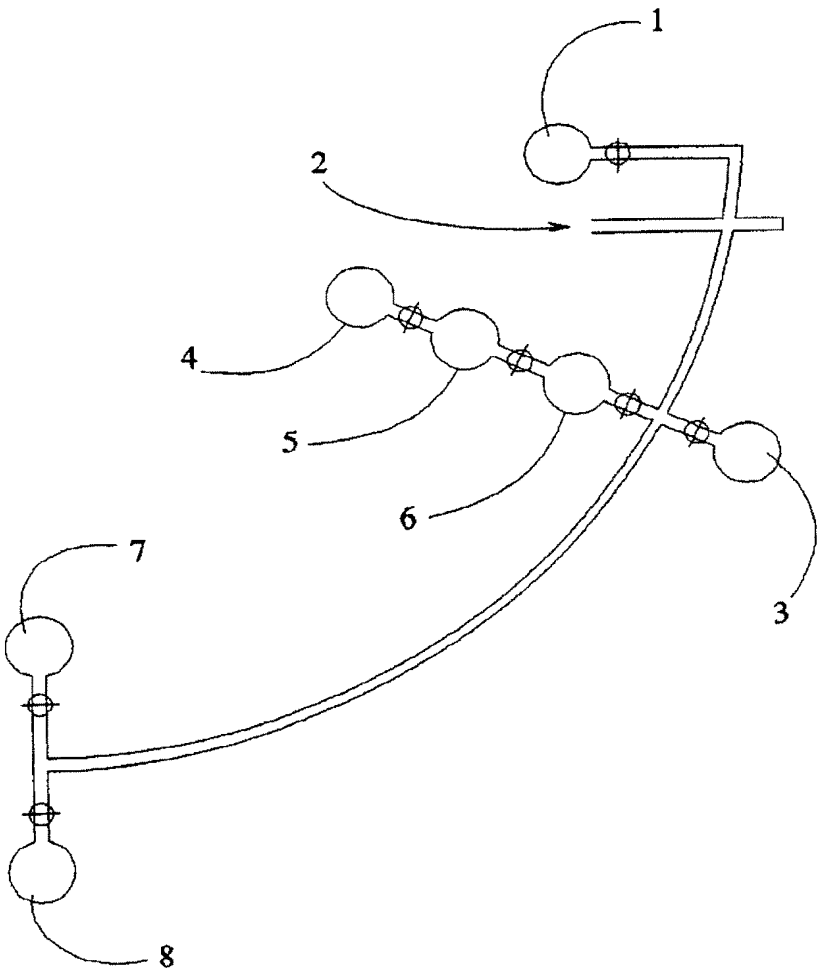
[Drawing 28]

FIG. 28



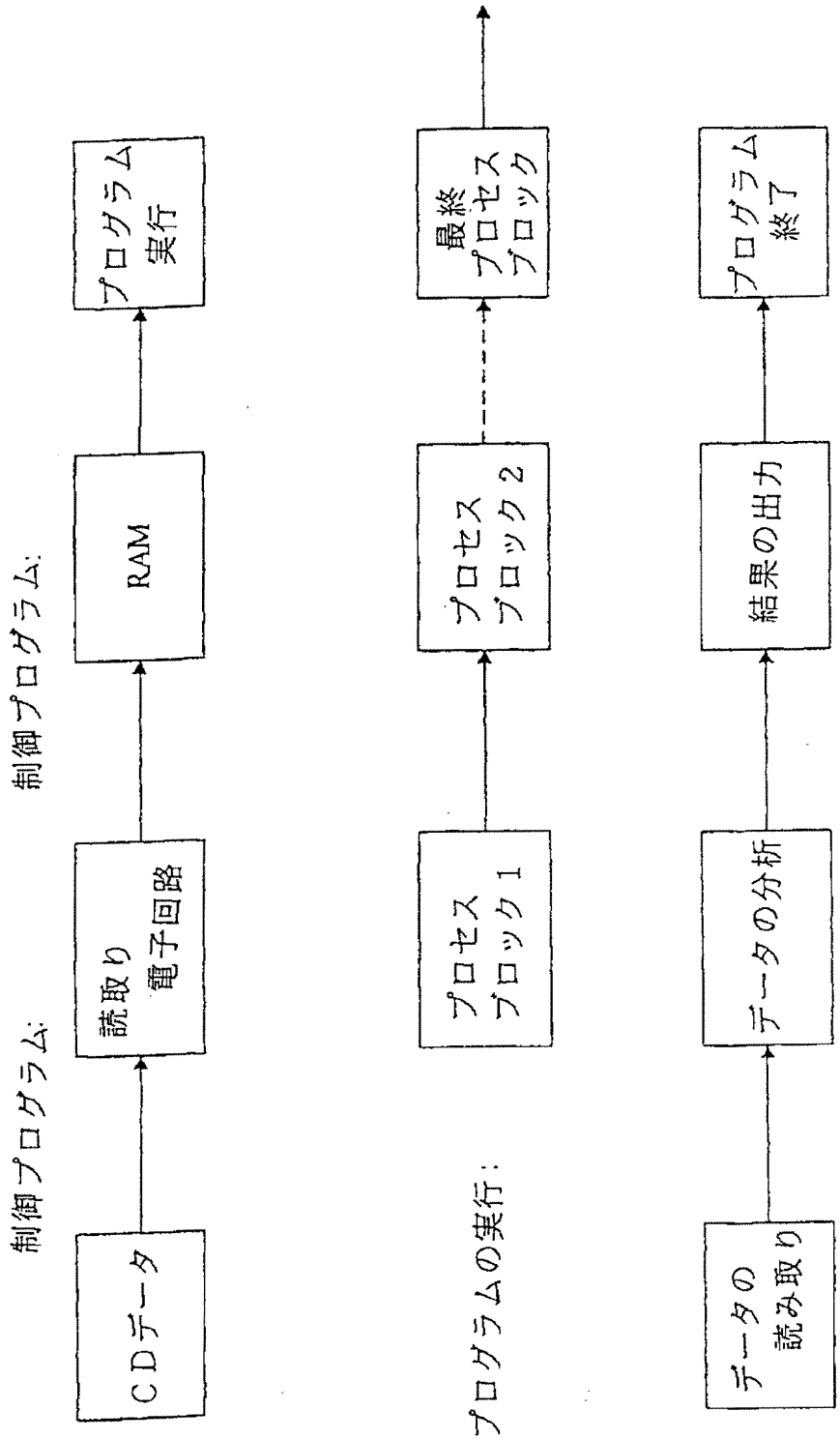
[Drawing 29]

FIG. 29



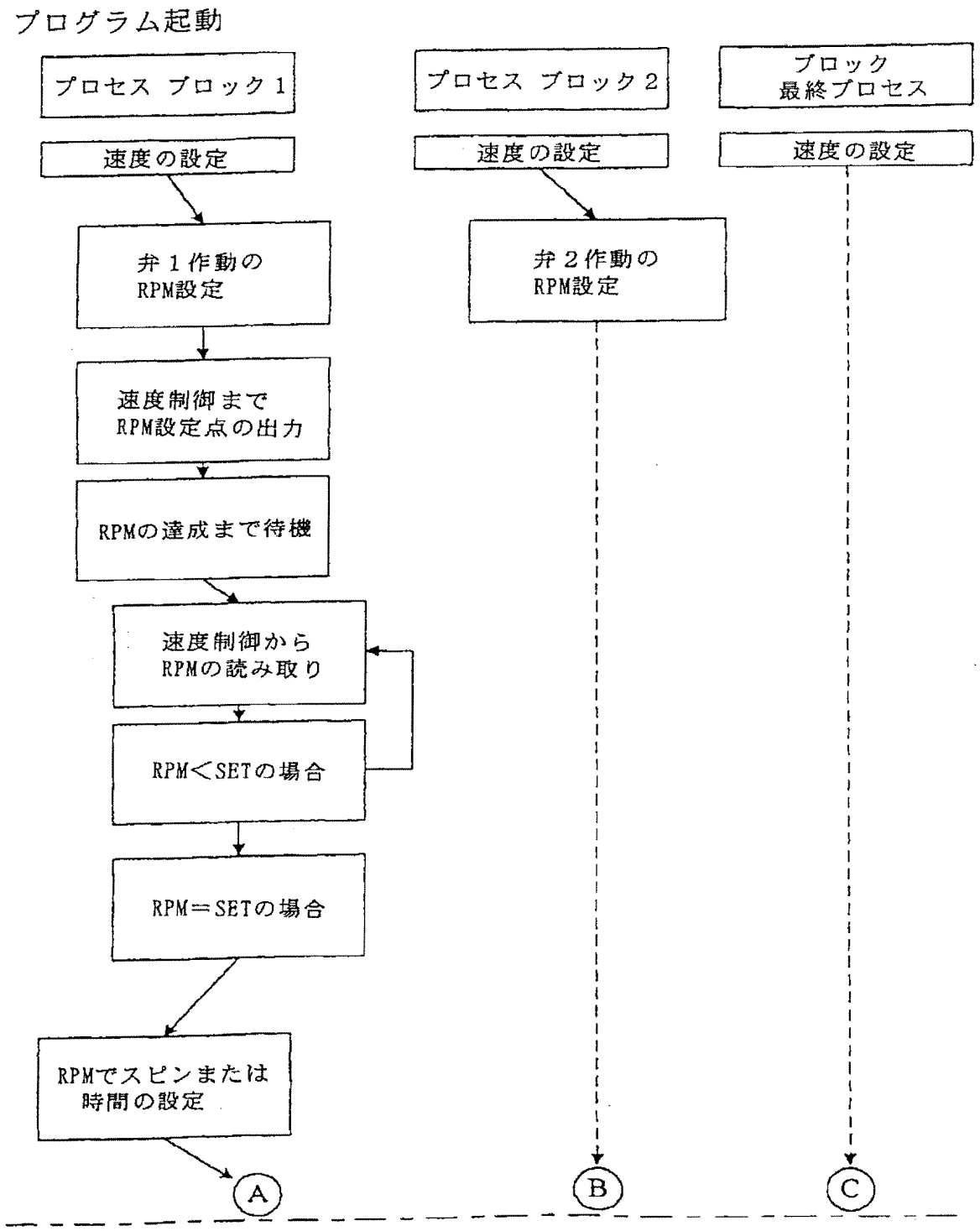
[Drawing 30]

FIG. 30



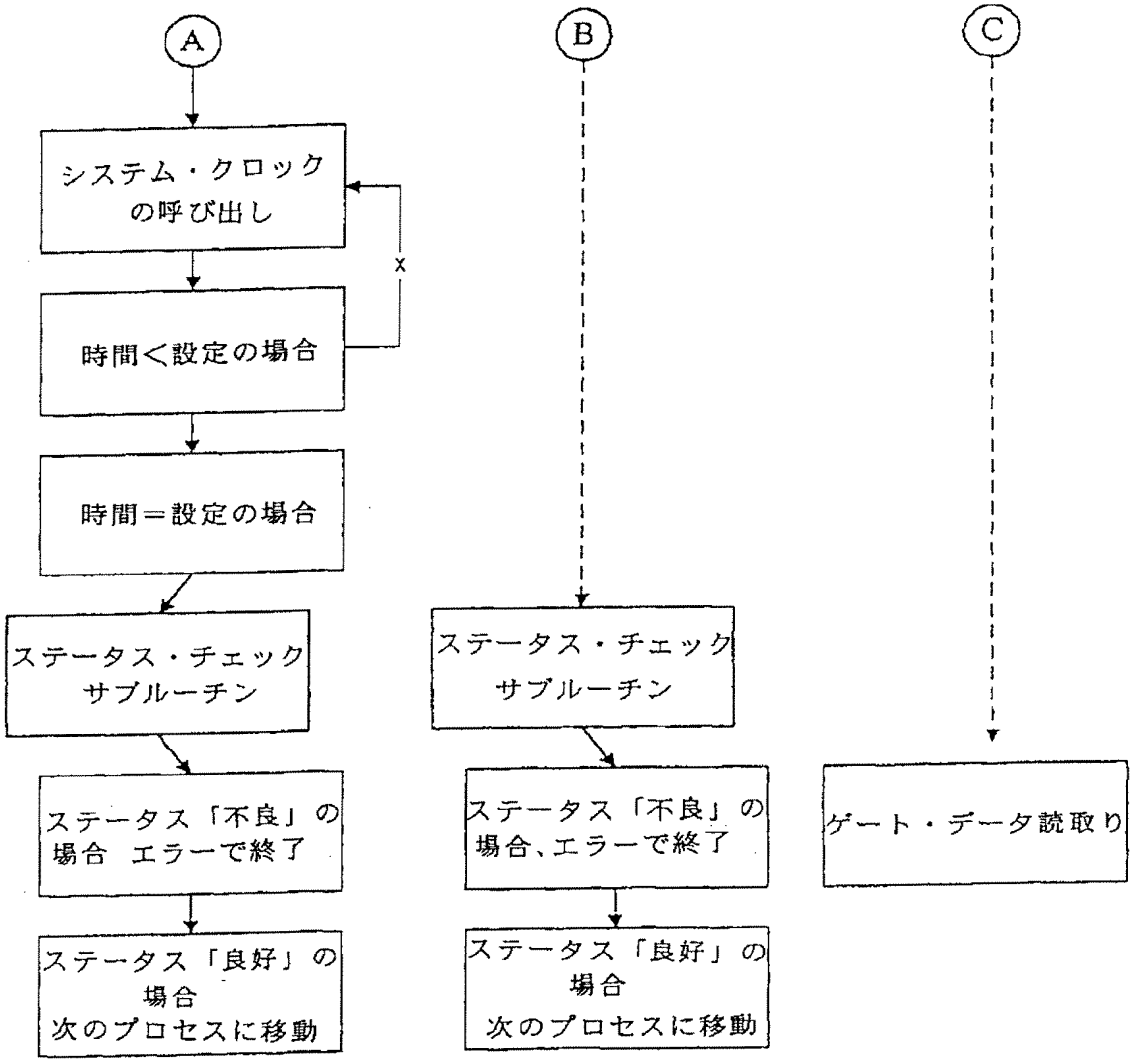
[Drawing 31]

FIG. 31A



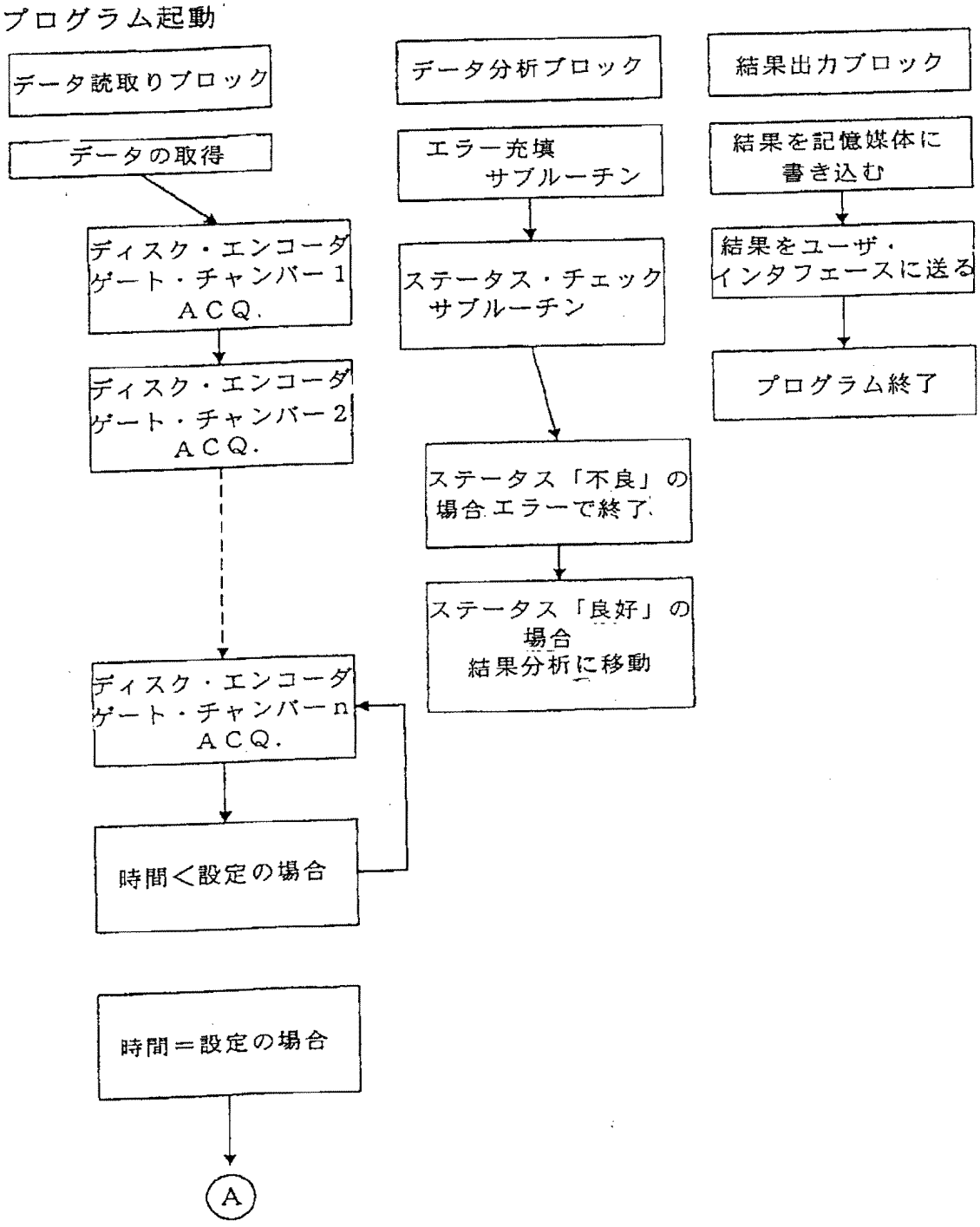
[Drawing 31]

FIG. 31B



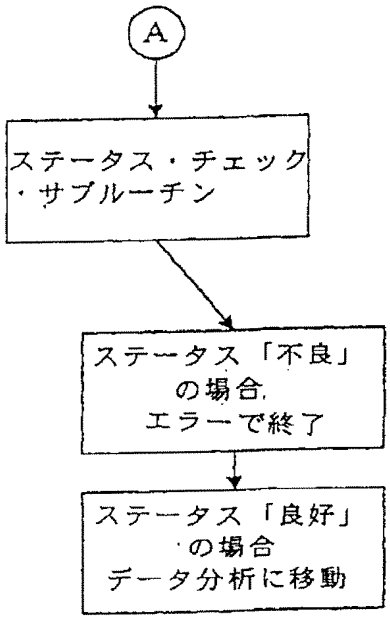
[Drawing 32]

FIG. 32A



[Drawing 32]

FIG. 32B



[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

WRITTEN AMENDMENT

[Written amendment]
[Filing date]March 18 (1999.3.18), Heisei 11
[Proposed Amendment]
CLAIMS
1. It is ** about the 1st flat two-dimensional field and the 2nd flat two-dimensional field that faces it.
Two or more microes in which the 1st page is embedded in said 1st two-dimensional field including ******
A sample input means and a micro channel are connected with a channel including a sample input means,
The 2nd flatness that carries out fluid contact and faces the 1st flat two-dimensional field of a platform
** by which a two-dimensional field controls the speed of rotation of a platform, a period, or a direction
In order to be coded electromagnetically [**] with the instruction set which can be read and to authorize further
A microsystem provided with an instruction set including the control instruction of analysis, diagnosis, or a quality control
- Platform,
It connects so that a pivot means may act on a microsystem platform functionally.
The base, the pivot means, the power supply, and user Inta Faye as whom it acts and who do rotary contact to it
The minute manual operating device and operation control means containing SU,
It is fluid minute operation equipment moved to the centripetal target which is **********,
A lot of fluids in the micro channel of a platform are connoisseurs about a micro channel.

It is during sufficient time to carry out and move a fluid and revolving speed, and is a time of a platform.
It is moved through said micro channel by the central force produced from ******,
Fluid minute operation equipment moved to a centripetal target.
2. The 2nd which faces the 1st flat two-dimensional field and it
Including a substrate with a flat two-dimensional field, the 1st page buries to said 1st two-dimensional field, and it is **.
including the micro channel and sample input means of rare ****** -- a sample input means -- and
It is connected, a micro channel carries out fluid contact, and they are the 1st flat two dimensions of a platform.
The speed of rotation of the 2nd flat two-dimensional field that faces a ** side of a platform, a term
In order to control between or a direction, it is electromagnetically coded with the instruction set which can be read,
Ma having an instruction set including the analysis for authorizing, diagnosis, or a quality control
IKURO system platform;
A pivot means acts on a microsystem platform functionally, and they are it and a time.
It is ******(ed) and connected and an operation control means is installed in the 2nd two-dimensional field of a platform.
the base, pivot means, and power supply which are oriented with the command containing the instruction set carried out
A minute manual operating device including a ** user interface and operation control means;
It is fluid minute operation equipment moved to the centripetal target which is **********,
A lot of fluids in the micro channel of a platform are connoisseurs about a micro channel.
It is during sufficient time to carry out and move a fluid and revolving speed, and is a time of a platform.
****** which moves through said micro channel according to the central force produced from ******
Fluid minute operation equipment moved mentally.
3. there are the 1st flat two-dimensional field and the 2nd flat two-dimensional field that faces it

A substrate is included and the 1st page is the 1st.
Two or more micro channels and sample input means which are embedded in a two-dimensional field are included,
A sample input means and a micro channel are connected, and fluid contact is carried out, and

a liquid flow is a liquid flow.
** to which the external surface shape of a micro channel is changed so that easy [of the ******] may be carried out, and it may be boiled or may be barred
** -- it being alike and letting a micro channel pass more -- a direction -- the price -- **
2nd flat two dimensions that faces the 1st flat two-dimensional field of a platform
Are electromagnetic for a field to control the speed, period, or direction of rotation of a platform.
the analysis for being coded with the instruction set which can be read and authorizing further, and diagnosis -- moreover
Microsystem platform provided with an instruction set including a ****** administrative order;
A pivot means acts on a microsystem platform functionally, and it is it.
Rotary contact is carried out, it is connected and said operation control means is ** to the 2nd flat face of a platform.
The base, pivot means, power supply which are oriented with the command containing the instruction set **(ed),
And a minute manual operating device, an operation control means, and; including a user interface construct, and it is **.
It is fluid minute operation equipment moved to the centripetal target which is ****,
A lot of fluids in the micro channel of a platform are connoisseurs about a micro channel.
It is during sufficient time to carry out and move a fluid and revolving speed, and is a time of a platform.
It is moved through said micro channel by the central force produced from ******, and reaches according to it.
Sufficient revolving speed to move a fluid through a micro channel is my KUROCHI.
The surface of YANNERU
It is dependent on an outside and is movement of the fluid from [near the center of a disk] to the position of the single part of a disk.
Fluid minute operation equipment moved to the centripetal target depending on the increase in **********.
4. The microsystem platform was embedded in said 1st two-dimensional side.
Claim 1 which contains further two or more micro channels, reaction chambers, and reagent reservoirs,
Apparatus given in 2 or 3.
5. Plurality by which microsystem platform was embedded in the 1st two-dimensional side
It is a preparation about a ** micro channel, a reaction chamber, a reagent reservoir, and a sample input means.
A reagent input means, a micro channel, a reaction chamber, and a reagent reservoir are

connected.
Carrying out fluid contact, the fluid from a micro channel, a reaction chamber, and a reagent reservoir is **.
The apparatus according to claim 1, 2, or 3 controlled by the micro valve **(ed).
6. The 1st flat two-dimensional field and 2nd flatness of microsystem platform
The apparatus according to claim 1, 2, or 3 by which a two-dimensional field forms a disk.
7. The 1st of a microsystem platform and the 2nd flat two-dimensional field are **.
The aperture arranged at the centripetal target attached to the spindle on a small manual operating device is limited.
Thereby, rotational movement of a spindle is rotation of a microsystem platform.
The apparatus according to claim 1, 2, or 3 changed into movement.
8. Microsystem platforms are an organic substance, mineral matter, and a crystalline substance substance,
And it consists of amorphous materials.
The apparatus according to claim 1, 2, or 3 which comprises material chosen from a group
.
9. Microsystem platforms are silicon, silica, quartz, and Serra further.
It is ** about the material chosen from the group who consists of Mick, metal, or plus CHITTA.
**, the apparatus according to claim 1, 2, or 3.
10. A microsystem platform is DE about 1 to 25 cm in radius.
The apparatus according to claim 6 which is ISUKU.
11. A microsystem platform is a thickness of about 0.1 to 100 mm.
Come out, it is and the cross section size of the micro channel between the 1st and 2nd flat two-dimensional side is 50.
It is less than 0 micrometer and they are 90 PASE of said cross section size of a platform from 1%.
The apparatus according to claim 1, 2, or 3 which is NTO.
12. A microsystem platform is a thickness of about 0.1 to 100 mm.
Come out, it is and they are a reaction chamber between the 1st and 2nd flat two-dimensional side, or a reagent reservoir.
From said 1% of thickness of a platform, a cross section size is 75% and is **.
**, the apparatus according to claim 4 or 5.
13. A microsystem platform is the abbreviation 30,000r from about 1 rpm.
The apparatus according to claim 1, 2, or 3 which rotates with the revolving speed of pm.
14. Microsystem platforms are two or more sample input means and a reagent reservoir.
A reaction chamber and it
The large quantity which is boiled and connected, contains the micro channel embedded into

it, and contains a sample
It is DE by the central force which a fluid produces from rotation of a microsystem platform.
It is on ISUKU from the inside of a sample input means to a reaction chamber, and a reaction chamber.
It is moved and a lot of reagents are the inside of a reaction chamber, and reaction tea from a reagent reservoir.
The apparatus according to claim 4 or 5 moved from MBA.
15. A microsystem platform is the flat 1st 2 of a platform.
It is embedded in a dimension side and the detection chamber connected to a micro channel is included,
A minute manual operating device is for a detection means, in order that a detection chamber may take out an assay output.
The apparatus according to claim 1, 2, or 3 containing the detection means ******(ed).
16. The detection means on a device is in rotational movement of a microsystem platform.
It is a statement to claim 15 by which alignment is carried out to the detection chamber on a ** platform.
Apparatus.
17. The apparatus according to claim 15 by which a detection means contains a light source and a photodetector.
18. a light source illuminates a detection chamber and light lets a detection chamber pass -- width -- reflection
The apparatus according to claim 17 detected by ** and a photodetector.
19. The detection chamber on a microsystem platform is optically transparent.
A certain apparatus according to claim 18.
20. The detection means is standing it still and they are the frequency of rotation of a platform, or its multiple.
It is a detection chamber at equal frequency.
The apparatus according to claim 16 to sample.
21. The apparatus according to claim 20 by which a detection means contains a stroboscope light source.
22. The apparatus according to claim 21 whose detection means is a monochromatic light source.
23. a detection means -- an optical absorbance, fluorescence, chemical luminescence, and optical dispersion -- or emanate
The apparatus according to claim 15 which detects ability.
24. Claim which includes further the temperature control element which carries out heat contact with a micro platform

The paragraphs 1, 2, 3, and 4 or apparatus given in 5.
25. Claim which includes further the heat detecting means which carries out heat contact with a micro platform
Apparatus given in 1, 2, 3, 4, or 5.
26. ** by which a microsystem platform is connected with a micro channel
The apparatus according to claim 1, 2, 3, 4, or 5 containing a fault means.
27. A microsystem platform is a reaction reservoir or micro CHANE.
The apparatus according to claim 1, 2, 3, 4, or 5 containing the mixing element connected to RU.
28. A microsystem platform is a reaction reservoir or micro CHANE.
The apparatus according to claim 27 containing a static mixer including the field from which the texture of RU was taken out.
29. A microsystem platform is a reaction chamber or my KUROCHI.
Capillary tube Mai connected to YANERU
The apparatus according to claim 4 or 5 containing a clo valve.
30. Microsystem platforms are two or more air channels and an exhaust port.
And it is a statement to claims 1, 2, 3, and 4 which include an air displacement channel further, or 5.
Apparatus.
31. The pivot means of a minute manual operating device is an account to claims 1 and 2 which are electric motors, or 3.
Apparatus of **.
32. Acceleration and speed of rotation of a minute manual operating device of a microsystem platform
The apparatus according to claim 1, 2, or 3 including the rotational movement control means for controlling.
33. User Inta Faye in whom a minute manual operating device contains a monitor and an alphanumeric character keypad
The apparatus possessing SU according to claim 1, 2, or 3.
34. Claims 1 and 2 or 3 in which a minute manual operating device contains AC power supply or DC power supply
Apparatus of a statement.
35. Electric KO by which a microsystem platform is connected to a minute manual operating device
The opportunity possessing the electrical connector in contact with a nectar according to claim 1, 2, or 3
Vessel.

36. ** in which a minute manual operating device contains a microprocessor and the memory connected to it
**** 1 and 2 or apparatus given in 3.
37. A reading means or a writing means for a minute manual operating device to read an instruction set
The included apparatus according to claim 1, 2, or 3.
38. Claim 3 whose reading means is a compact disc laser reading means
Apparatus given in 7.
39. A writing means is a compact disc writing means.
A certain apparatus according to claim 37.
40. The 2nd flat two-dimensional side of a microsystem platform is a machine language.
The apparatus according to claim 1, 2, 3, 4, or 5 coded with a command.
41. Machine language commands are operation of a platform, and data from a platform.
Acquisition or analysis, a data storage and search, communication to other devices, or direct equipment performance
The apparatus according to claim 40 which controls diagnosis.
42. the read only memory by which a minute manual operating device is coded with a machine language command -- or
The apparatus possessing account 100 million lasting memory according to claim 1, 2, or 3.
43. Machine language commands are operation of a platform, and data from a platform.
Acquisition or analysis, a data storage and search, communication to other devices, or direct equipment performance
They are control ****** and the apparatus according to claim 42 about diagnosis.
44. Further, it is the one whole two-dimensional side of each microsystem platform, and is **.
1st microsystem platform and 2nd microsystem - which contacts for being
The apparatus according to claim 1, 2, 3, 4, or 5 containing a platform.
45. A microsystem platform is the abbreviation 30,000r from about 1 rpm.
The apparatus according to claim 44 which rotates at the rate of pm.
46. The fluid on a microsystem platform is ** from about 0.1 cm/s.
At the fluid speed of about 1000 cm of seconds
Claims 1, 2, 3, and 4 and 5 which are moved within the micro channel of a platform
It is alike and is apparatus of a statement.
47. A microsystem platform,
PURA connected with below so that each of a sample inlet port may act functionally
Two or more sample inlet ports arranged in concentric circle around the center of TTOHOMU,
It separates from the center of a platform, is arranged radiately, and acts on below functionally.

Two or more micro channels connected like,
A special reagent goes into the analyte of a measuring object, and release of the reagent from each of a reservoir,
It is ****** below functionally [it is controlled by a micro valve and / two or more micro channels].
** -- two or more reagent reservoirs connected like,
Two or more analyte detection arranged in periphery around the rim of a micro platform Chamber,
Implication,
Movement of the biological sample which passes along the micro channel from a sample inlet port
Movement of the reagent which reaches and passes along the micro channel from a reagent reservoir is Mai.
the central force produced in rotational movement of a clo system platform -- **
****,
The opportunity according to claim 1, 2, or 3 for measuring the quantity of the analyte in a biological sample
Vessel.
48. A biological sample is blood, urine, cerebrospinal fluid, plasma, saliva, sperm, or amniotic liquid.
The apparatus according to claim 47.
49. An analyte detection chamber is transparent claim 47 optically.
It is alike and is apparatus of a statement.
50. Still more nearly electric wiring between each of a micro valve, and an electric controller device
The claim by which opening and closing of ****** and a valve are controlled by the electrical signal from a controller device
Apparatus given in the paragraph 47.
51. a micro channel -- the periphery from the center of a platform -- linear shape -- arrangement
****, the apparatus according to claim 47.
52. A micro channel arranges from the center of a platform in concentric circle to a periphery.
The apparatus according to claim 47 carried out.
53. The apparatus according to claim 47 by which a minute manual operating device contains a detection means.
54. The detection means is standing it still and they are the frequency of rotation of a platform, or its multiple.

It indicates to claim 47 which samples an analyte detection chamber output by equal frequency.

******.

55. The apparatus according to claim 47 by which a detection means contains a stroboscope light source.

56. The apparatus according to claim 47 whose detection means is a monochromatic light source.

57. A detection means detects fluorescence, chemical luminescence, optical dispersion, or radioactivity.

The apparatus according to claim 47.

58. It is a method for measuring the quantity of the analyte in a biological sample,

It is micro SHISUTE according to claim 47 about a biological sample.

The step applied to the sample inlet port of a MU platform,

The step which arranges a microsystem platform in a minute manual operating device,

The biological sample which contains the analyte from sample entrance auto through a micro channel

It rotates at a microsystem platform at sufficient time to move and speed.

The step which provides movement,

the time which a reagent moves into a micro channel and is mixed with a biological sample

It is a reagent from a reagent reservoir by generating a signal from a control device between ******s.

The step which opens each of the micro valve which controls ******,

Analyte which exists in a biological sample and a sample with a biological detector containing a device

Mixing of the reagent in the analyte detection chamber which detects the signal proportional to the amount of ** is observed.

Step,

The step which records the measured value of the quantity of the analyte in a biological sample,

The ****** method.

59. A biological sample is blood, urine, cerebrospinal fluid, plasma, saliva, sperm, or amniotic liquid.

The method according to claim 58.

60. The measured value of the quantity of the analyte in a sample is on a micro platform within a device.

Or the method according to claim 58 recorded by the both.

61. ******** on a microsystem platform

An appearance chamber is the transparent method according to claim 58 optically.
62. the detected signal is the analyte -- a detection chamber -- a platform -- or
The one according to claim 58 detected by frequency equal to the frequency of rotation of the multiplesd
Law.
63. The way according to claim 58 the detected signal is a monochromatic light source.
64. The detected signal is a fluorescence signal, a chemical luminescence signal, or a colorimetry signal, and it is **.
**, the method according to claim 63.
65. A microsystem platform,
It is arranged in concentric circle around the center of a platform, and sample ports are a suction hole and **.
each of a sample inlet port acts functionally including a ****** channel -- as -- with
Two or more sample inlet ports connected downward,
The following [from the center of a platform, it is arranged radiately and acts functionally]
Two or more micro channels connected,
The trial from each of a reservoir in which the special reagent went into the gas or particles for detection
Medicinal opening is controlled by a micro valve and micro valves are a controller device and the electrical and electric equipment.
It contacts, and it connects with below so that two or more micro channels may also be operated functionally,
Two or more reagent reservoirs,
Two or more gases or the detector of particles arranged by the micro platform,
Implication,
Movement of the environmental sample which passes along the micro channel from a sample inlet port, and a trial
Movement of the reagent which passes along the micro channel from a medicine reservoir is micro SHISUTE.
It is moved by the central force produced in rotational movement of a MU platform,
The opportunity according to claim 1, 2, or 3 for detecting the gas or particles containing an environmental sample
Vessel.
66. ** in which an environmental sample contains air, water, soil, or the ground biological substance
Apparatus given in **** 65.
67. The apparatus according to claim 65 by which a detector contains a gas sensor chip.

68. A detector indicates to claim 65 which contains a transparent particle recovery chamber optically.
******.
69. The apparatus according to claim 68 by which a detector also includes a coherent light source.
70. The apparatus according to claim 69 from which particles are detected by optical dispersion.
71. A trial for a detector to examine particles chemically by a micro channel
The particle recovery chamber connected so that it may act on the reagent reservoir containing medicine functionally
The included apparatus according to claim 65.
72. It is a method for detecting the gas or particles containing a **** sample,
It is a sample entrance of the microsystem platform according to claim 65 about an environmental sample.
The step contacted in a port,
The step which arranges a microsystem platform in a minute manual operating device,
It lets a micro channel pass and is an environmental sample of a gas or the shape of a grain from a sample inlet port.
It is at a microsystem platform during sufficient time to move and at speed.
The step which provides rotational movement,
It is the time which a reagent moves into a micro channel and is mixed with an environmental sample, and is a term.
It is opening of the reagent from a reagent reservoir by generating a signal from a control device in between.
The step which opens each of the micro valve to control,
A detector detects the signal proportional to the quantity of the gas which exists in an environmental sample, or particles.
Within the detection chamber of the gas or particles to carry out, it is a mixture of an environmental sample and a reagent directly.
Or the step which detects the gas component or the granular component of an environmental sample,
The step which measures a gaseous quantity or the quantity of the particles in an environmental sample,
******, a method.
73. An environmental sample contains air, water, soil, or the ground biological substance,
The method of claim 72.
74. A gas is a statement to claim 72 detected by the gas sensor chip.

Method.
75. To claim 72 from which particles are optically detected by a transparent particle recovery chamber
The method of a statement.
76. ** from which particles are detected by coherent optical dispersion
A method given in **** 72.
77. It is a micro to the reagent reservoir in which particles contain the reagent for examining particles chemically.
It detects by the particle recovery chamber connected so that it may act functionally with a channel.
The solution of the reagent are carried out and according [particles] to starting of a micro valve and rotation of a platform
It is a statement to claim 72 which is mixed and reacts to the reagent in a micro channel after **.
Method.
78. Microsystem platforms are a micro channel and sample entrance Pau.
A thin film disk including TO, a reactant reservoir, a reaction chamber, and a sample exit port
Each of the film disk which comprised an accumulated layer and was accumulated is an independence type.
It is a statement to claims 1, 2, 3, and 4 which come out and provide the platform of this invention, or 5.
Apparatus.
79. A microsystem platform is my KUROCHI about 100 micrometers in diameter.
In order that it may comprise a radiate array of YANERU and a micro channel may prevent coagulation
It is alike, and is processed by heparin and a micro channel opens by a near end at the center of a disk.
Claims 1 and 2 for calculating a hematocrit value from a blood sample or 3 carried out
Functional ****** which is alike, is apparatus of a statement and contains a coherent light source and a minute manual operating device
The recording device connected to it is also included so that business may be carried out, and it is a micro channel of a blood sample.
Central force which movement along which it passes produces in rotational movement of a microsystem platform
Apparatus moved as be alike.
80. Inside of rotation of a coherent light source of a platform
It indicates to claim 79 attached on the movable track arranged radiately from the bottom of its

heart.

******.

81. -- further -- the micro channel of a microsystem platform -- it

The Clark electrode connected so that it may act on ** functionally is included, and an electrode is my KUROCHI.

The apparatus according to claim 79 in contact with the blood sample in YANERU.

82. -- further -- my taro channel of a microsystem platform -- it

The cutting electrodes connected so that it may act on ** functionally are included, and an electrode is micro CHANE.

The apparatus according to claim 79 in contact with the blood sample in RU.

83. It is a method for calculating a hematocrit value from a blood sample,

It is a micro of the microsystem platform according to claim 79 about a blood sample.

The step applied to the near end of a channel,

The step which arranges a microsystem platform in a minute manual operating device,

the red corpuscles containing the blood sample for moving in accordance with the grade of a micro channel -- **

A microsystem platform is provided with rotational movement at the sufficient time and speed for that of **.

The step to carry out,

SU which scans a micro channel along with the length by a coherent light source Tetraethylpyrophosphate,

It is ** to the arbitrary positions in alignment with the micro channel which limits the boundary between red corpuscles and plasma.

SU which detects change by ********

Tetraethylpyrophosphate,

The step which records the position of the boundary of each micro channel,

The standard curve which connects a hematocrit value with a bordering position, and each micro tea

The position of this boundary of flannel is compared and the hematocrit called for by it is recorded.

The step to carry out,

The ****** method.

84. It is a method for calculating a blood oxygenation value from a blood sample,

About a blood sample, it is a microphone of the microsystem platform according to claim 81.

The step applied to the near end of ROCHANERU,

The step which arranges a microsystem platform in a minute manual operating device,

in order to contact the Clark electrode connected to a micro channel -- a blood sample -- **

A microsystem platform is provided with rotational movement at the sufficient time and speed for that of **.
The step to carry out,
The step which detects the blood oxygenation value of he blood sample,
The step which records the blood oxygenation value calculated by it,
The ****** method.
85. Microsystem platforms are two or more sample input means and reactant storage.
A vessel, a reaction chamber, a micro
Mai who was connected so that it might act on a valve and it functionally, and was embedded into it
The layer was accumulated for the microsystem platform including the clo channel.
It comprises an array and the 1st layer is a sample input means, a reactant reservoir, and a reaction chamber,
And a micro channel is included, the 2nd layer contains a micro valve, and the 3rd layer is a micro.
The electric connection from a valve to an electric controller device is included, and the 4th layer is ** about a sealed layer.
It sees and a layer is accumulated on the upper part of a substrate with a uniform microsystem platform.
The apparatus according to claim 1, 2, 3, 4, or 5 by which melting is carried out to it.

[Translation done.]